

ANNUAL SUMMARY OF GROUND WATER CONDITIONS IN THE SOUTHEAST BOISE GROUND WATER MANAGEMENT AREA CALENDAR YEAR 2020

Prepared by Gus Womeldorph 5/3/2021

This report describes the ground water conditions in and around the Southeast Boise Ground Water Management Area (GWMA) based on the ground water level observation network established in the spring of 2000 under the guidance of the Southeast Boise Ground Water Advisory Committee (Advisory Committee). The network is a cooperative effort among Micron Technology, Inc., Suez Water Idaho Inc., and the Idaho Department of Water Resources (IDWR). The cooperators submit water level data to IDWR and/or provide support and access to wells for monitoring. The data is maintained in the IDWR ground water database. The J.R. Simplot Co., City of Boise, Sunroc Corp., Idaho Transportation Department, Idaho Department of Lands, Boise Gun Club, and other land owners provide access to wells within the monitoring network.

Status of Monitoring Network

The network currently consists of 33 active monitoring sites (**Table A1**), with one site (03N 02E 14ABC) containing a set of five nested wells for a total of 38 active wells (**Figure B1**). Although the core monitoring network has remained relatively stable over time, two changes occurred in 2020: IDWR redeployed a transducer to the Micron Columbia Well, and the Cromon well (03N 02E 36CDA1) became inactive per landowner request. All inactive monitoring sites are listed at the bottom of **Table A1**.

IDWR manually measured water levels in 31 of the 38 wells during each of the final three quarters in 2020. IDWR's spring 2020 measurements were disrupted by COVID-19 and the Statewide Stay-Home Order. Twenty-five wells are equipped with In-Situ™ pressure transducers, and are programmed to collect water level and water temperature observations at a minimum of two times per day (**Figure B1**), with most storing hourly readings. IDWR downloaded the transducer data at all 25 wells during manual measurement visits. Suez Water Idaho Inc. measured the remaining seven wells bi-monthly.

In early 2020, IDWR and Micron agreed to change the monitoring frequency of the Micron wells from monthly to quarterly, aligning it with the rest of the Southeast Boise network. With pressure transducers installed in all eight wells in the Micron network, monthly visits were deemed unnecessary.

Ground Water Level Trends

Ground water level hydrographs showing the complete period of record for active wells in the monitoring network are shown in **Appendix C**. Ground water level hydrographs displaying data only for the period from January 1, 1990 to December 31, 2020 for all active monitoring wells are shown in **Appendix D**. All available data has been included in this report. A number of wells are subject to significant seasonal trends and/or pumping effects, which can make it difficult to draw meaningful conclusions from the hydrographs. Similarly, nearby pumping and/or management changes may impact apparent water level trends. Periodic data collection in wells lacking continuous measurement devices can make it difficult to conclude trends due to the uncertainty regarding the seasonal peaks and troughs

of the hydrographs relative to the instantaneous manual measurements. The magnitude of the observed water level changes can also be such that determining trends independent of factors such as systematic and random errors can be challenging. All qualitative and quantitative analyses should recognize the limitations of the data as well as the associated uncertainties. Statistical trend analysis has not been performed, however, qualitative trends have been summarized for the active wells.

Qualitative trends were determined by subtracting the minimum depth to water for a given calendar year from the minimum depth to water for calendar year 2020, and by subtracting the maximum depth to water for a given calendar year from the maximum depth to water for calendar year 2020 (**Table A2**). If the calculated difference for the minimum depth to water and the maximum depth to water values are both negative, the water level trend is said to be increasing (measured water levels are becoming shallower). If the calculated difference for the minimum depth to water and the maximum depth to water values are both positive, the water level trend is said to be decreasing (measured water levels are becoming deeper). If the calculated difference for the minimum depth to water and the maximum depth to water values have different arithmetic signs, the water level trend is said to be undetermined.

Qualitative trends for 5-, 10-, and 15-year intervals were developed for the active monitoring network (**Table A2**). In the last five years (2015 to 2020), there have been apparent decreasing trends in the water levels in 12 of the 38 active wells. In that same time period, there have been apparent increasing trends in water levels in nine of the 38 active wells. Water level trends for the remaining 17 wells were said to be undetermined due to water level ambiguity, and/or insufficient data.

Recommendations

In May 2019 the Advisory Committee requested that IDWR continue to pursue additional groundwater monitoring wells for the monitoring network, develop improved elevation data for the wells that currently utilize data based on topographic map data, utilize a statistical trend test methodology, produce hydrographs in the annual report using consistent scales whenever possible, and recommended that transducers be upgraded as appropriate and within a reasonable time frame to improve data collection. This annual report has detailed the progress made in the previous year towards furthering those Advisory Committee requests and recommendations. IDWR will continue to look for opportunities to pursue Advisory Committee requests and recommendations.

Appendix A

Tables

Table A1. Summary of the ground water monitoring network for the Southeast Boise GWMA.

Map ID	Well Number	Well Name	Period of Water Level Record	Status of Well	Comments
1	01N 01E 34AAA1	City of Boise Farm	2018 - 2021	Active	Transducer installed January 2018
2	01N 03E 04BBD1	Prigge	1994 - 2021	Active	Transducer installed October 2014, vented transducer installed April 2019
3	01N 04E 28CAC1	Ken Agenbroad	1979 - 2021	Active	
4	02N 01E 36BBB1	Harris South Cole	1969 - 2021	Active	Transducer installed May 2018
5	02N 02E 02BBC2	JR Flat	1989 – 2020	Active	
6	02N 02E 04CBB1	IDL House	1973 - 2021	Active	Transducer installed March 2017
7	02N 02E 07CBC1	Hollilynn	1993 - 2021	Active	Transducer installed May 2018
8	02N 02E 17ABD1	Ten Mile	1996 – 2019	Active	
9	02N 02E 21CBB1	SunRoc	2018 - 2021	Active	Transducer installed April 2018
10	02N 02E 22BBB1	Pioneer	1998 - 2020	Active	
11	02N 02E 34CCD1	Boise Gun Club	1976 - 2021	Active	Transducer installed November 2016
12	02N 03E 06DCA1	Micron Test #1	1986 - 2021	Active	Transducer installed October 2019
13	02N 03E 07BAC1	Micron Test #2	1983 - 2021	Active	Transducer installed October 2019
14	02N 03E 07CDA1	Pettibone	1997 - 2021	Active	Transducer installed October 2019
15	02N 03E 07DBB1	Micron Shallow Obs	1998 - 2021	Active	Transducer installed October 2019
16	02N 03E 07DBB2	Micron Deep Obs	1998 - 2021	Active	Transducer installed October 2019
17	02N 03E 09BAA2	Christensen	1993 - 2021	Active	Transducer installed October 2019
18	02N 03E 19DBB1	Micron South	2017 - 2021	Active	Vented transducer installed April 2019

Map ID	Well Number	Well Name	Period of Water Level Record	Status of Well	Comments
19	02N 03E 28CAA1	Blacks Creek Rest Area Westbound	2007 - 2021	Active	Transducer installed May 2018
20	02N 03E 34ACC1	Blacks Creek Exit ITD	2012 - 2021	Active	Transducer installed October 2014, vented transducer installed April 2019
21	03N 02E 11DDD1	TV Lenzi	1977 - 2021	Active	Transducer installed June 2016
22	03N 02E 14ABC	TVHP 4-1 through 4-5	2002 - 2021	Active	Transducers installed August 2016
23	03N 02E 25ACBC1	Helen Lowder Park	1992 - 2021	Active	
24	03N 02E 25CAA1	Centennial	1976 - 2020	Active	
25	03N 02E 26DBA1	Bergeson	1990 - 2020	Active	
26	03N 02E 35BAB1	Market	1991 - 2019	Active	
27	03N 02E 36ABC1	Terteling	1972 - 2020	Active	
28	03N 03E 30BCBD1	Hurok	1969 - 2021	Active	
29	03N 03E 30DDAA1	E Boise Ave	1987 - 2019	Active	Transducer installed March 2017, Lost access to site in Summer of 2019
30	03N 03E 31ADD1	Simplot Golden Development	1993 - 2021	Active	
31	03N 03E 32BBA1	Whitney Fire	1975 - 2021	Active	
32	03N 03E 32CDD1	Micron Columbia	1990 - 2021	Active	Transducer installed October 2019, Removed January 2020 due malfunction. Reinstalled October 2020.
33	03N 03E 33DAA1	Hammer Flats	1969 - 2021	Active	
34	02N 02E 03DDC1	Boise Airport	2019 - 2021	Active	Drilled June 2019, Transducer installed July 2019
	02N 02E 04CAA1	SEB IDL Field	2000 - 2009	Inactive	Discontinued in 2010

Map ID	Well Number	Well Name	Period of Water Level Record	Status of Well	Comments
	02N 03E 09BCA2	Vern Guyer	1993 - 2007	Inactive	Discontinued in 2007
	03N 02E 25CBCA1	Motive Power 41A	1997 - 2015	Inactive	Discontinued in 2015
	03N 03E 31BDD1 - DESTROYED	Oregon Trail - Destroyed	1977 - 2012	Inactive	Discontinued in 2013
	03N 02E 36CDA1	Cromon	1991-2018	Inactive	Homeowner requested an end to monitoring activity. Discontinued in 2020

Table A2. Qualitative trend results for the 38 active monitoring wells.

Well Number	Well Name	5 Year Trend (2020-2015)	10 Year Trend (2020-2010)	15 Year Trend (2020-2005)
01N 01E 34AAA1	City of Boise Farm	N/A	N/A	N/A
01N 03E 04BBD1	Prigge	Increasing	Undetermined	N/A
01N 04E 28CAC1	Ken Agenbroad	Undetermined	Decreasing	N/A
02N 01E 36BBB1	Harris South Cole	Decreasing	Decreasing	Decreasing
02N 02E 02BBC2	JR Flat	Undetermined	Increasing	Increasing
02N 02E 04CBB1	IDL House	Decreasing	Decreasing	N/A
02N 02E 07CBC1	Hollilynn	Undetermined	Decreasing	Decreasing
02N 02E 21CBB1	SunRoc	N/A	N/A	N/A
02N 02E 22BBB1	Pioneer	Decreasing	Undetermined	Decreasing
02N 02E 34CCD1	Boise Gun Club	Decreasing	Decreasing	Decreasing
02N 03E 06DCA1	Micron Test #1	Increasing	Increasing	Increasing
02N 03E 07CDA1	Pettibone	Decreasing	Undetermined	Increasing
02N 03E 07DBB1	Micron Shallow Obs	Decreasing	Decreasing	Increasing
02N 03E 07DBB2	Micron Deep Obs	Decreasing	Undetermined	Increasing
02N 03E 09BAA2	Christensen	Increasing	Increasing	Increasing
02N 03E 28CAA1	Blacks Creek Rest Area Westbound	Undetermined	Decreasing	N/A
02N 03E 34ACC1	Blacks Creek Exit ITD	Undetermined	N/A	N/A
03N 02E 11DDD1	TV Lenzi	Increasing	Increasing	Increasing
03N 02E 14ABC1	TVHP 4-1	Undetermined	Undetermined	Decreasing
03N 02E 14ABC2	TVHP 4-2	Undetermined	Undetermined	Undetermined
03N 02E 14ABC3	TVHP 4-3	Undetermined	Decreasing	Increasing
03N 02E 14ABC4	TVHP 4-4	Decreasing	Undetermined	Increasing
03N 02E 14ABC5	TVHP 4-5	Decreasing	Undetermined	Increasing
03N 02E 25CAA1	Centennial	N/A	Increasing	Increasing
03N 02E 26DBA1	Bergeson	Decreasing	Decreasing	Decreasing
03N 02E 35BAB1	Market	Increasing	Undetermined	N/A
03N 02E 36ABC1	Terteling	Increasing	Undetermined	Increasing
03N 03E 30BCBD1	Hurok	Decreasing	Undetermined	Undetermined
03N 03E 30DDAA1	E Boise Ave	N/A	N/A	N/A
03N 03E 32BBA1	Whitney Fire	Increasing	Increasing	Increasing
03N 03E 31ADD1	Simplot Golden Development	Undetermined	Undetermined	Increasing
03N 03E 32CDD1	Micron Columbia	Undetermined	Increasing	Increasing
03N 03E 33DAA1	Hammer Flats	Decreasing	Undetermined	Undetermined
02N 03E 07BAC1	Micron Test #2	Increasing	Increasing	Increasing

Well Number	Well Name	5 Year Trend (2020-2015)	10 Year Trend (2020-2010)	15 Year Trend (2020-2005)
02N 02E 17ABD1	Ten Mile	Increasing	Decreasing	Decreasing
02N 03E 19DBB1	Micron South	N/A	N/A	N/A
03N 02E 25ACBC1	Helen Lowder Park	Undetermined	Undetermined	Undetermined
02N 02E 03DDC1	Boise Airport Well	N/A	N/A	N/A

Appendix B

Figures

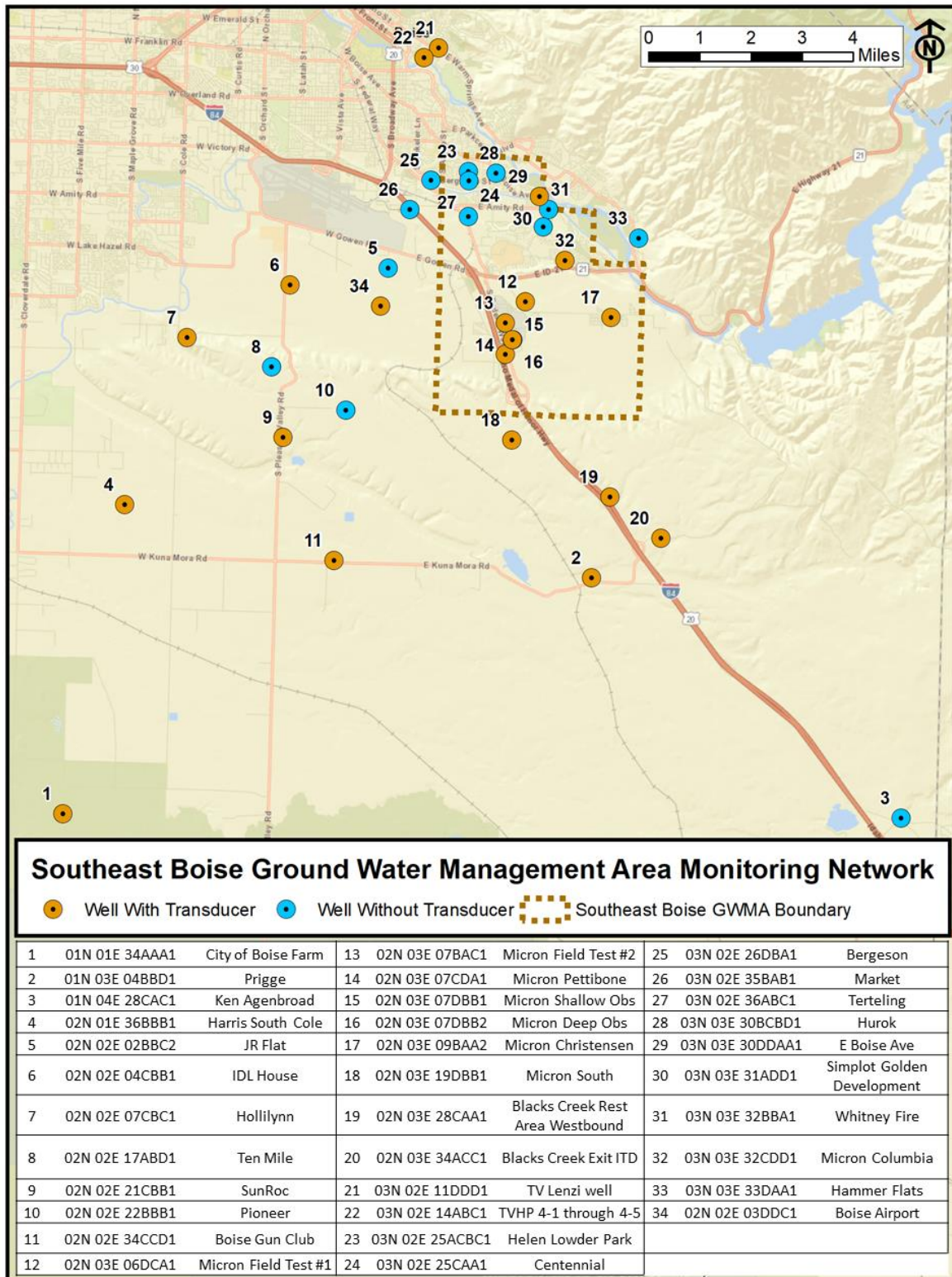
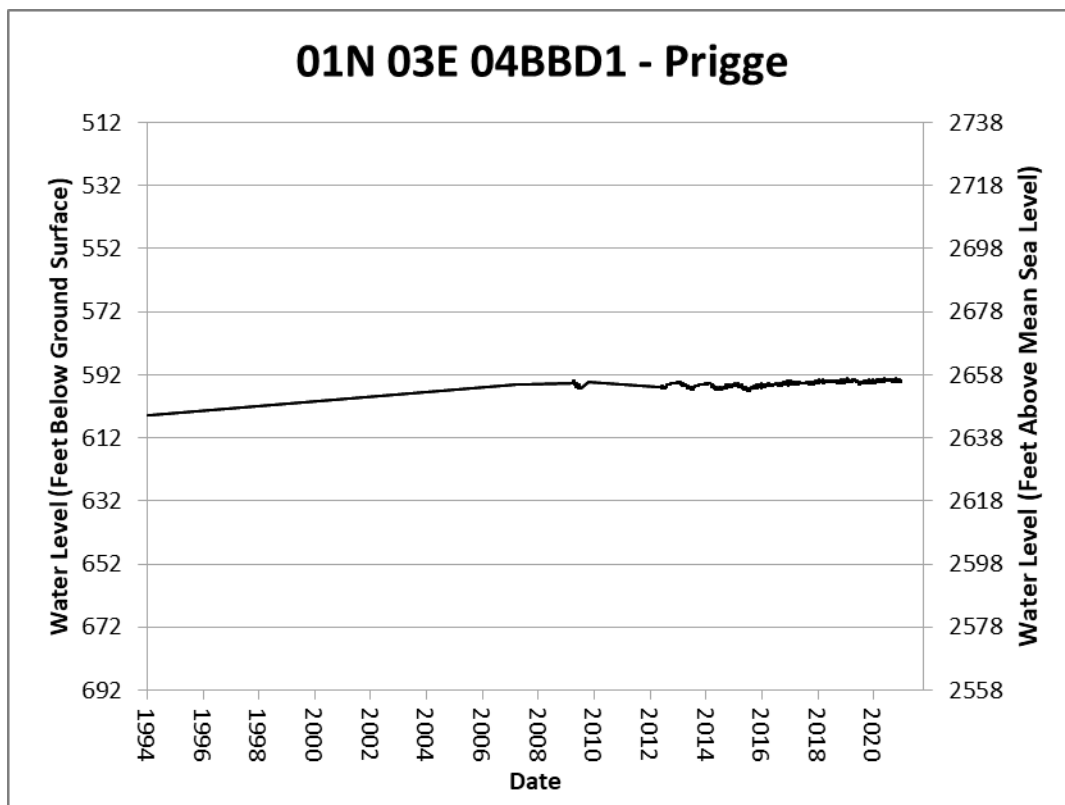
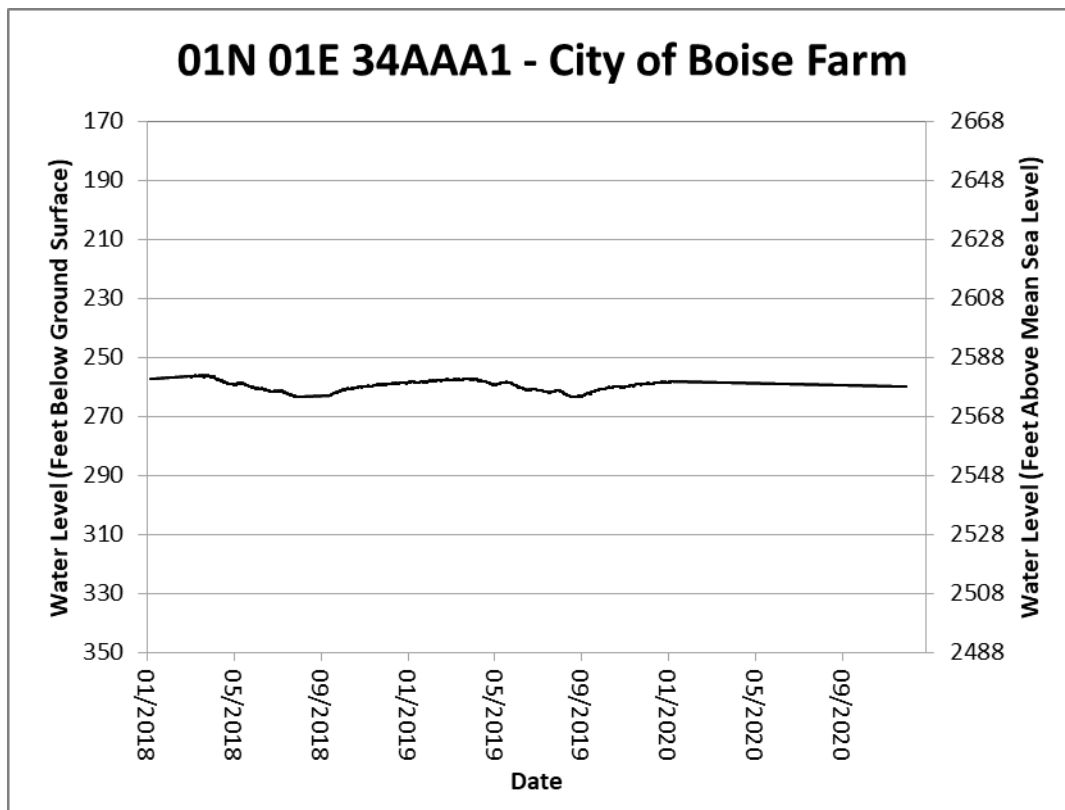
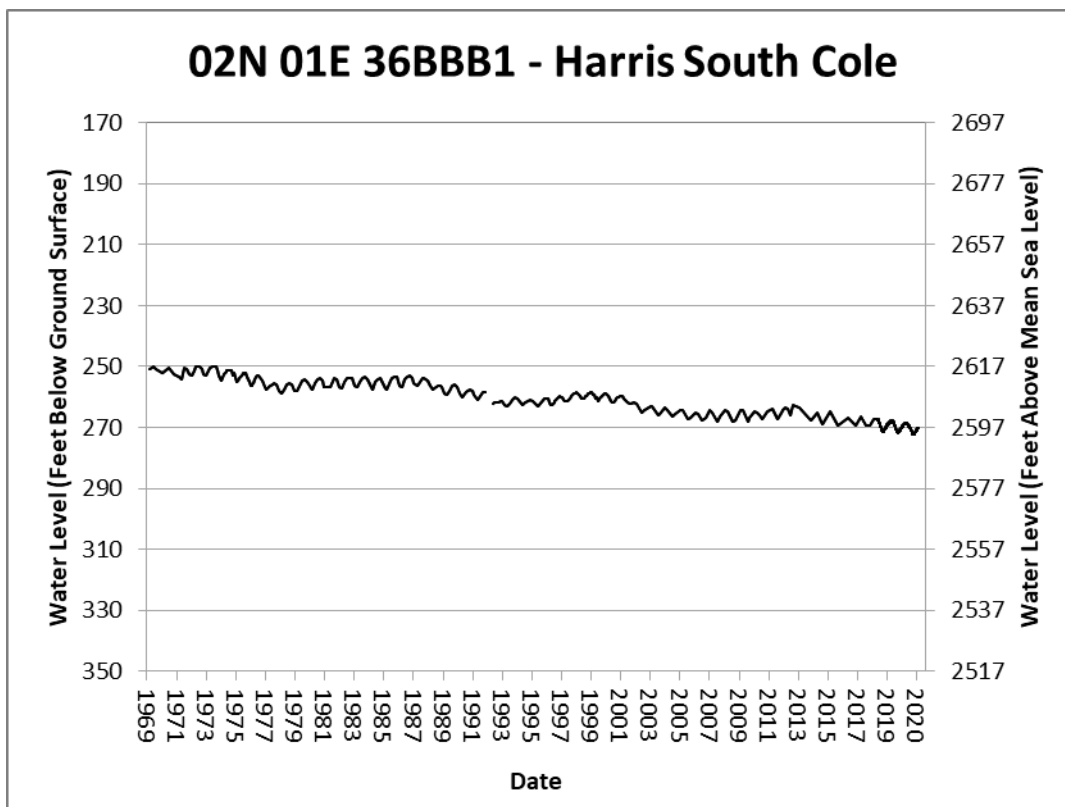
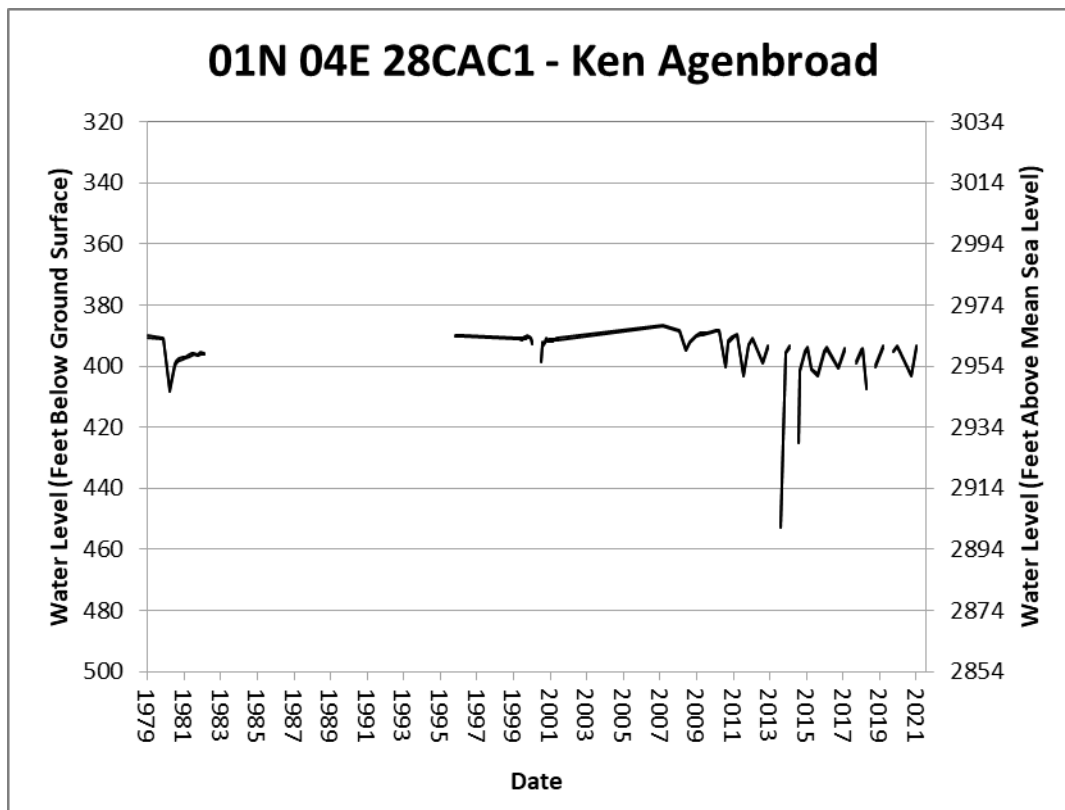


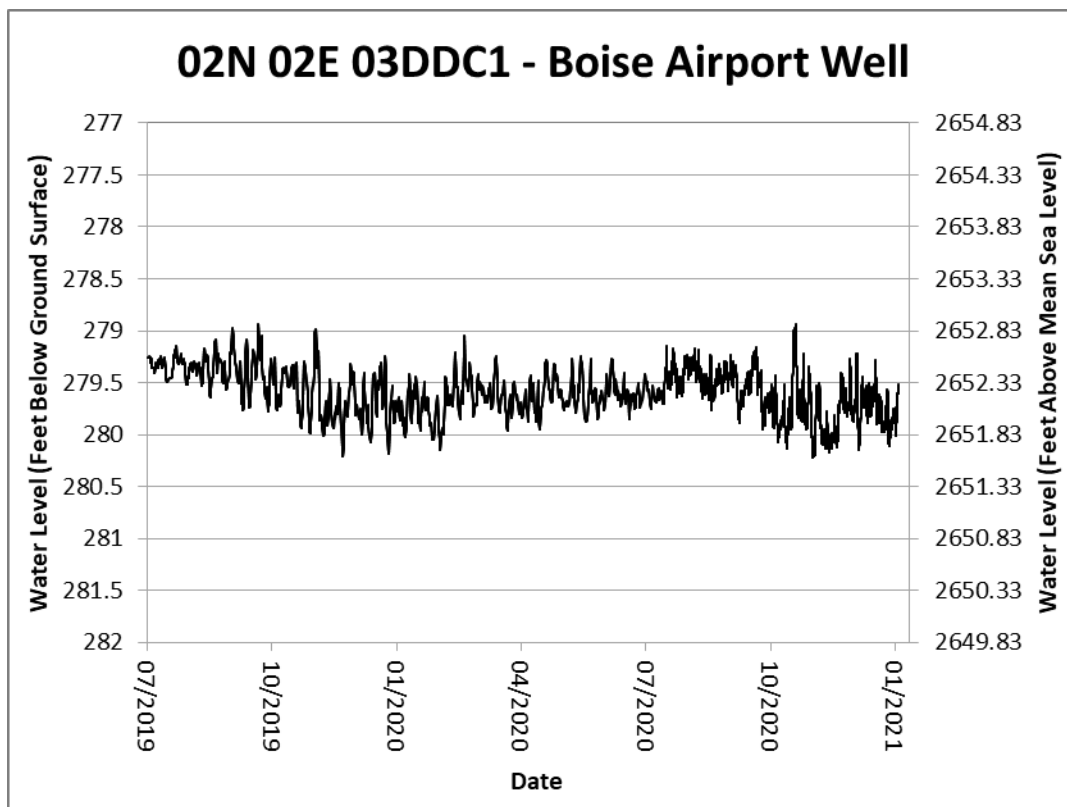
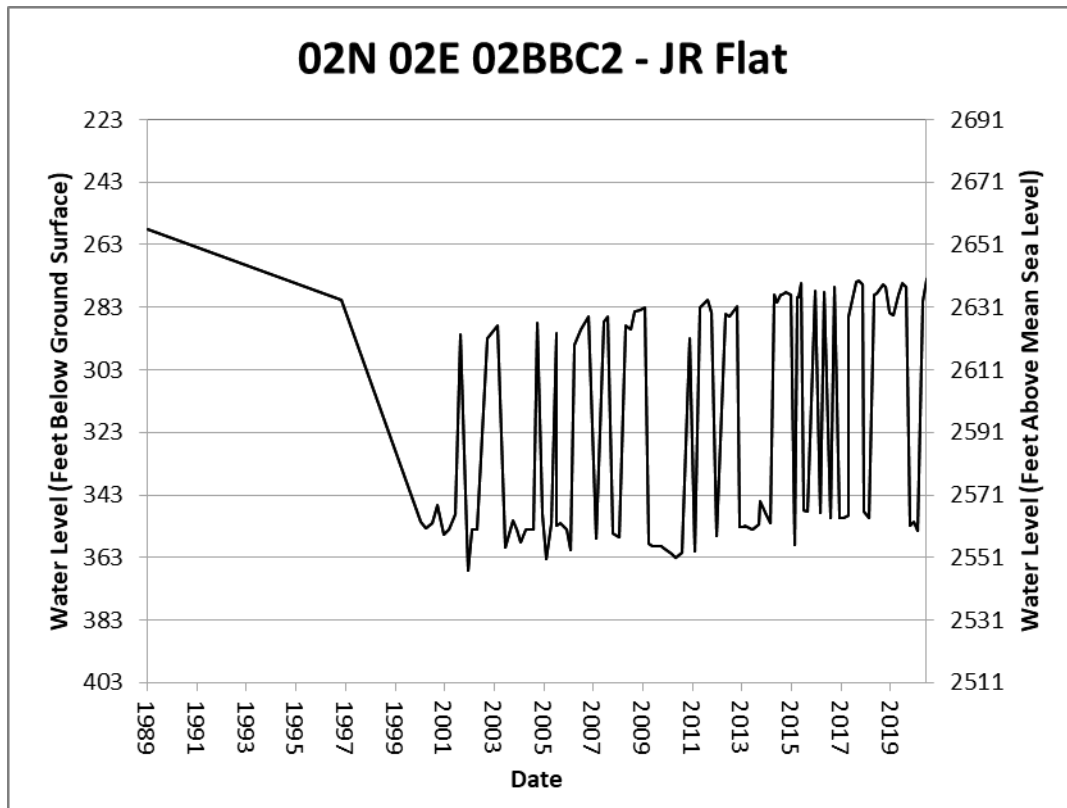
Figure B1. Current Southeast Boise GWMA monitoring network.

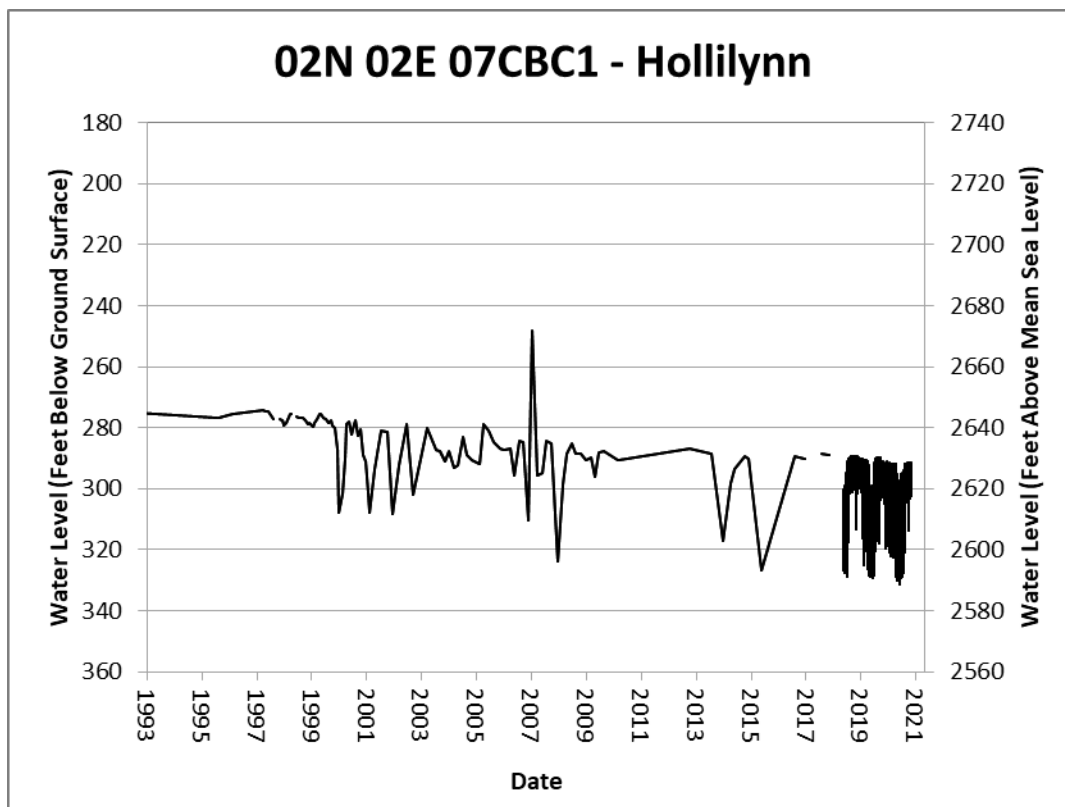
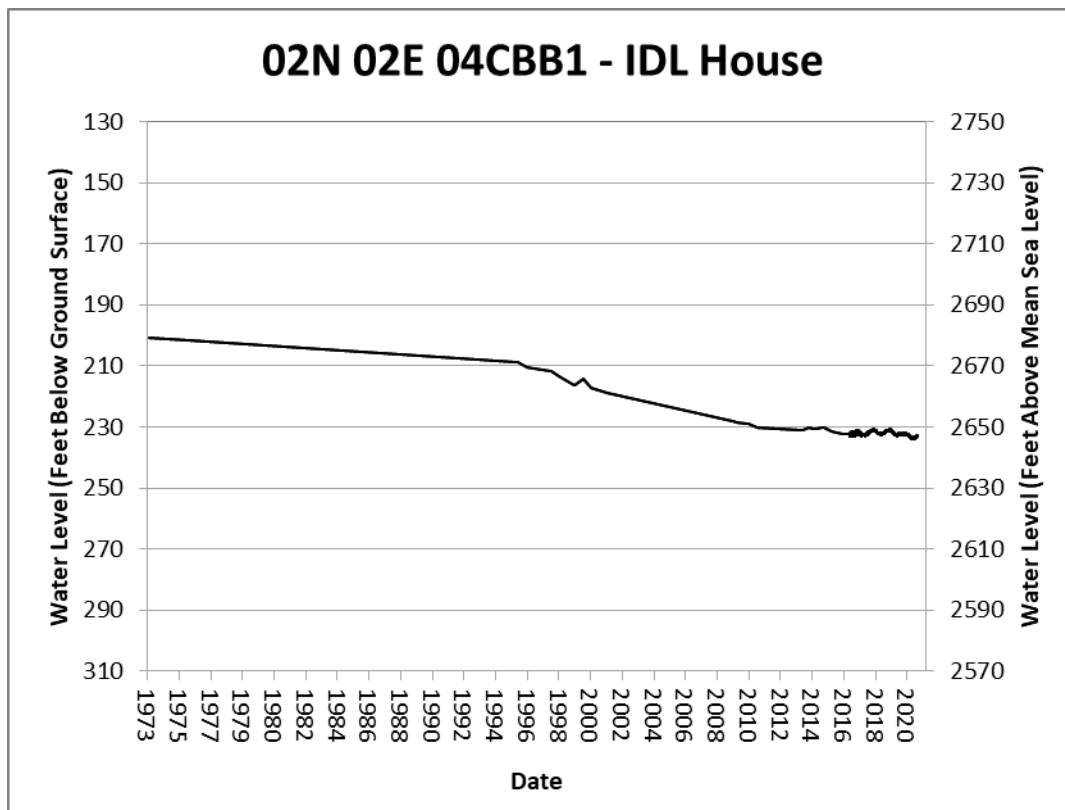
Appendix C

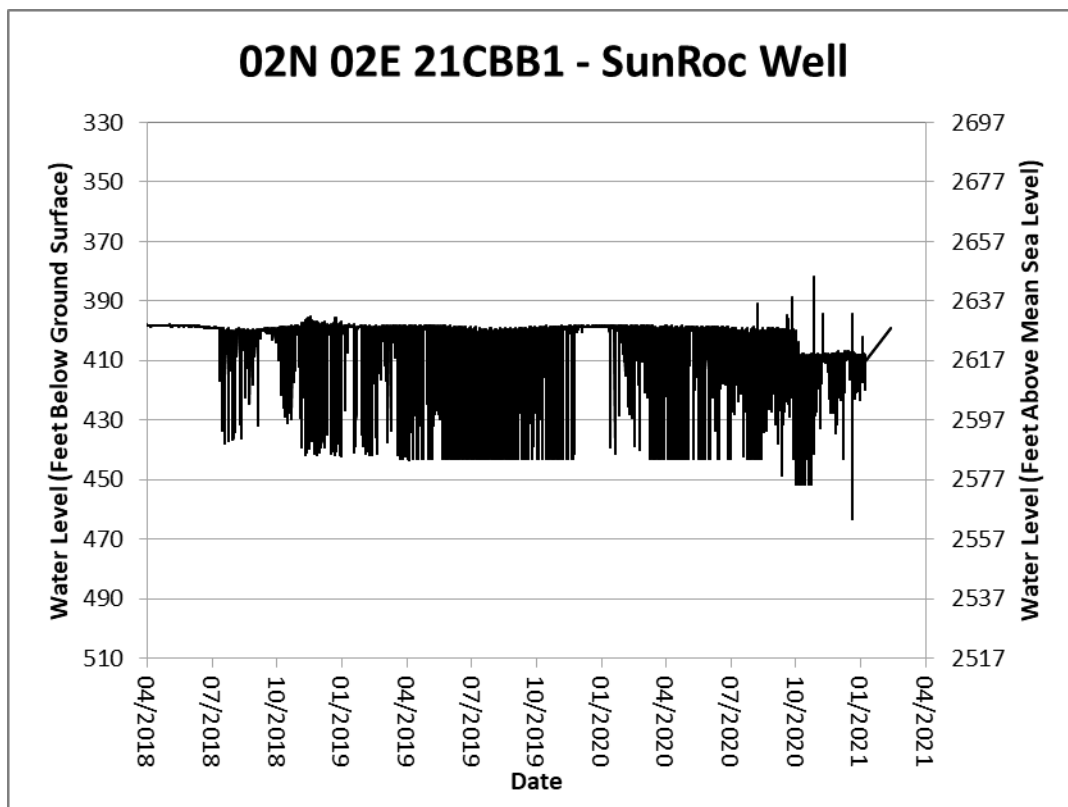
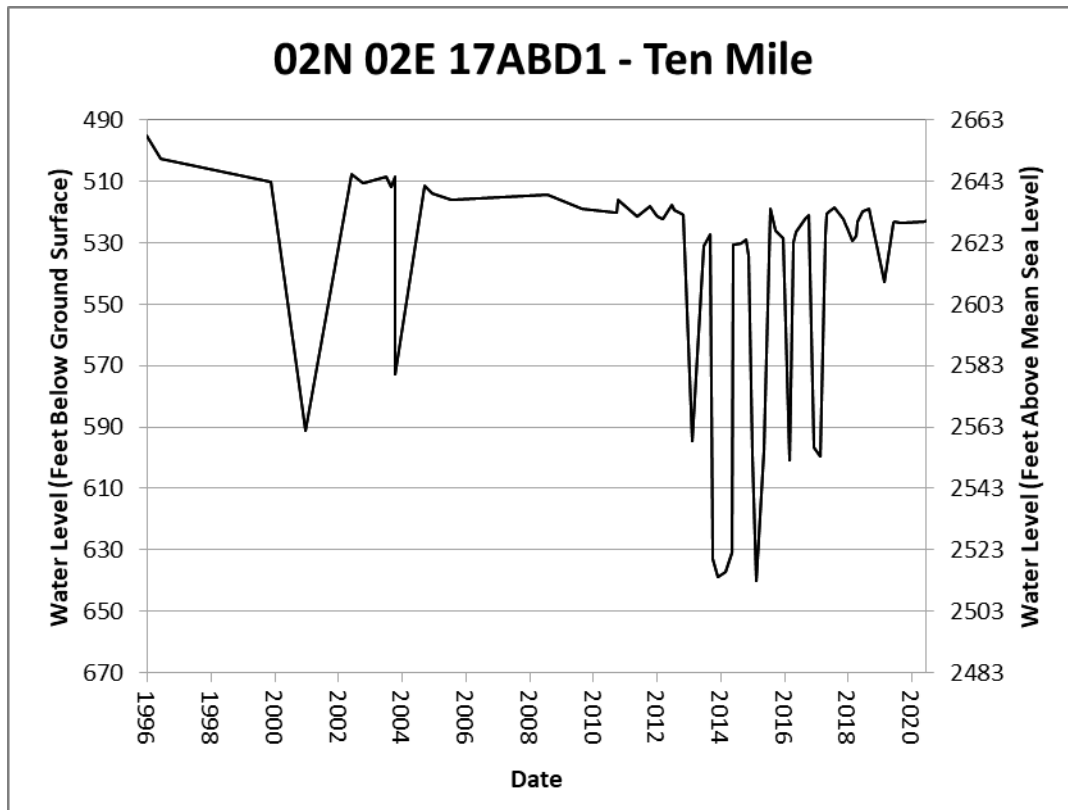
Hydrographs for Active Monitoring Wells

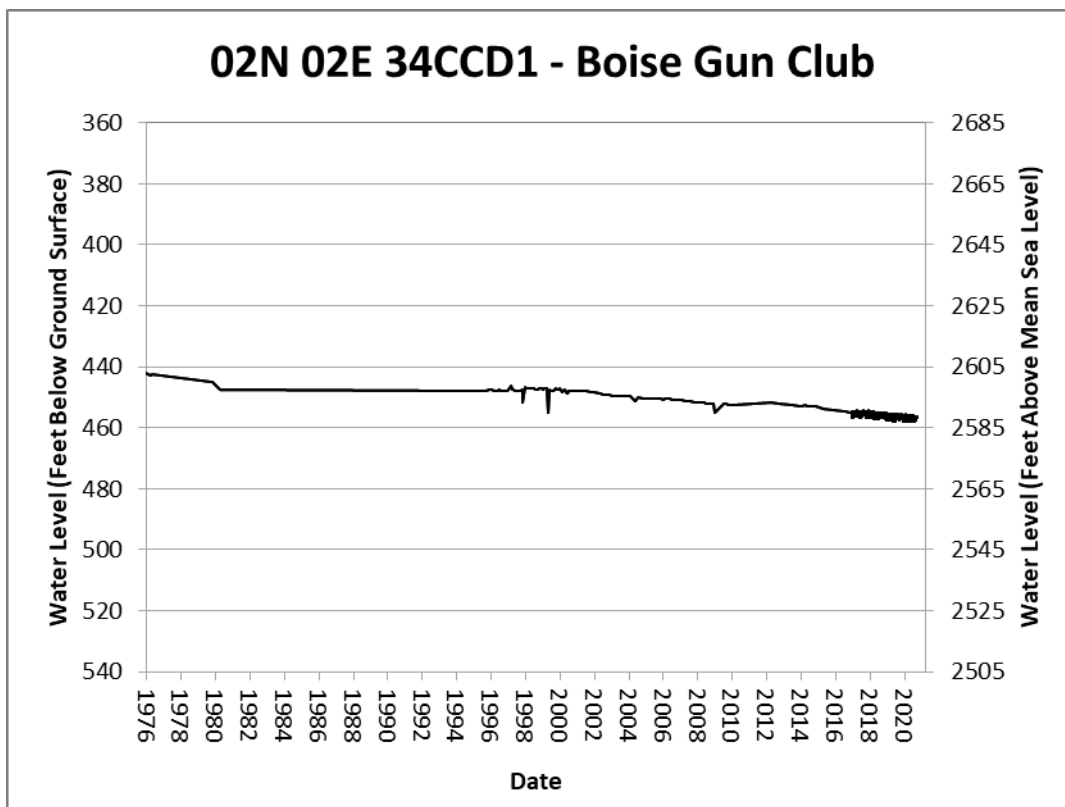
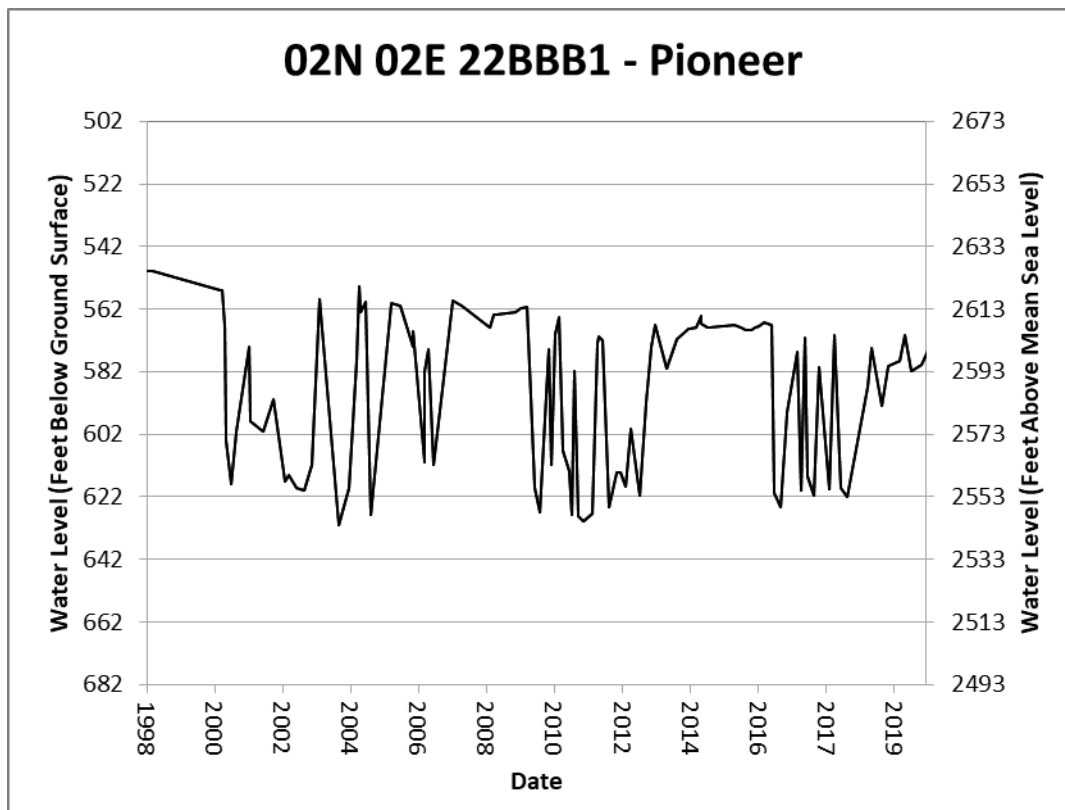


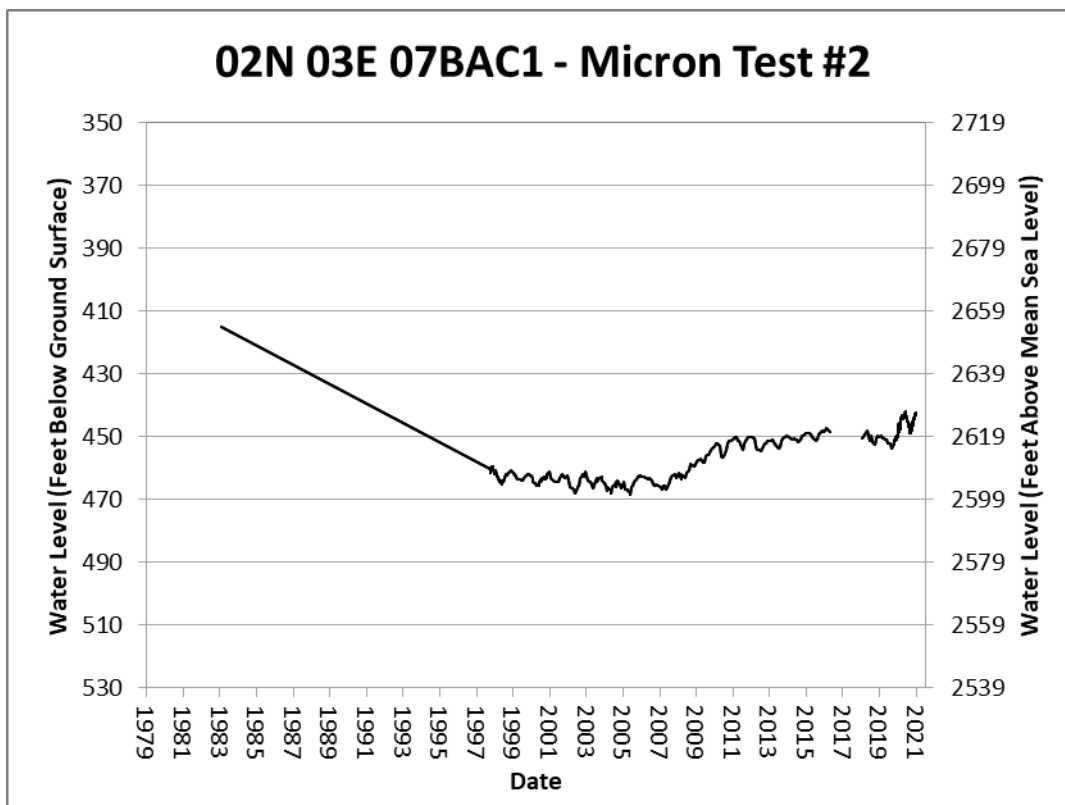
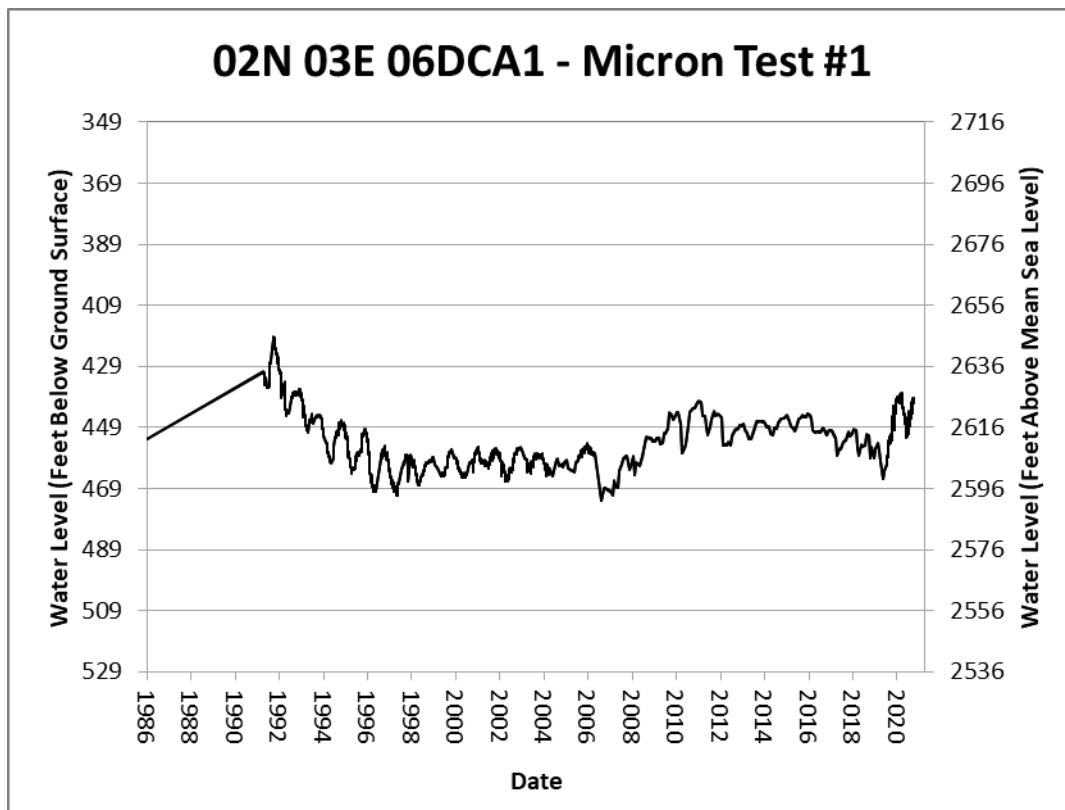


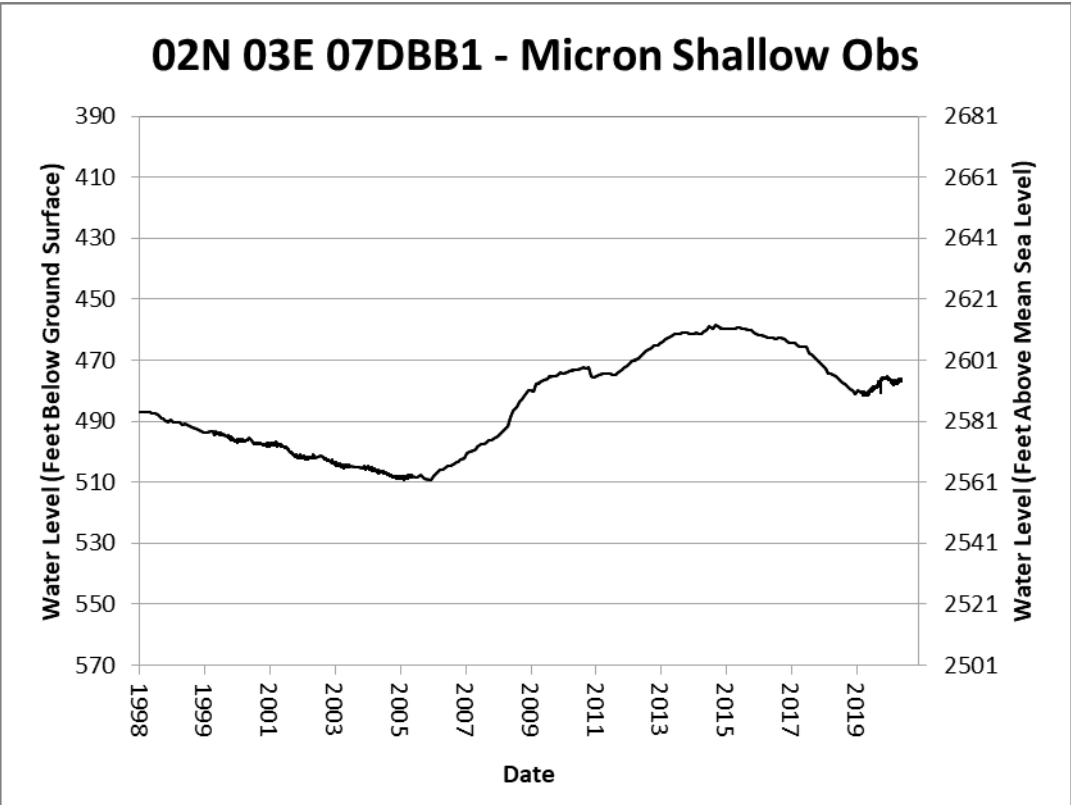
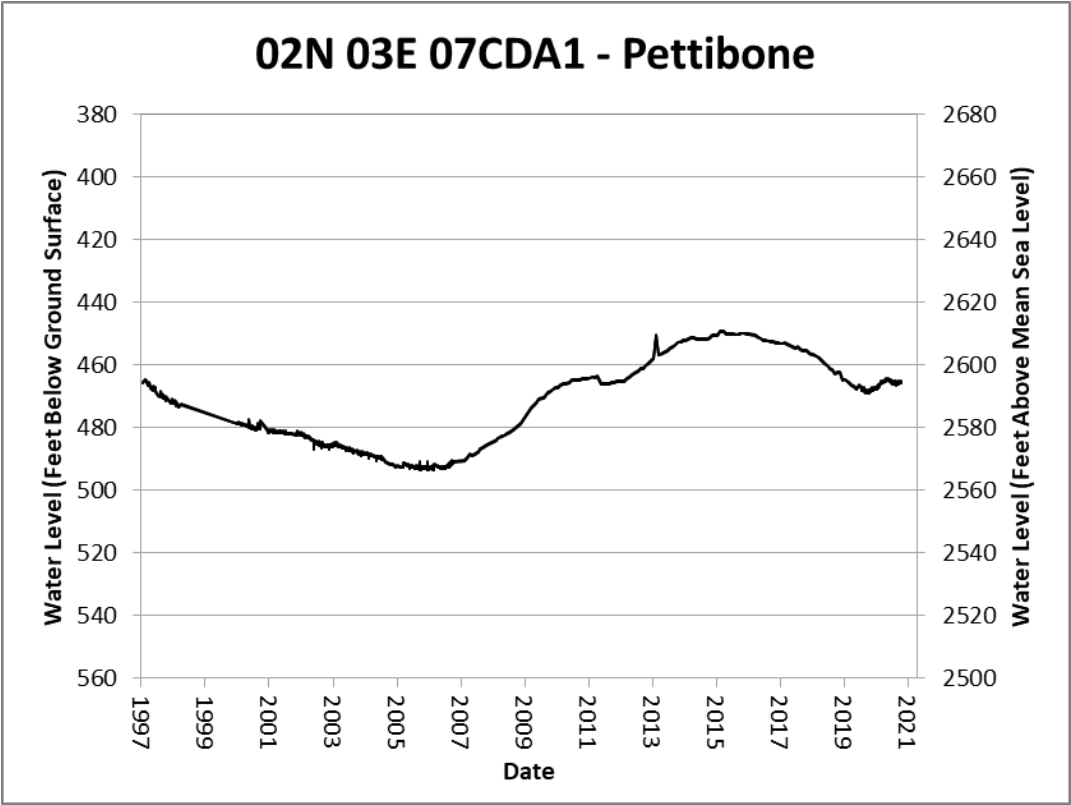


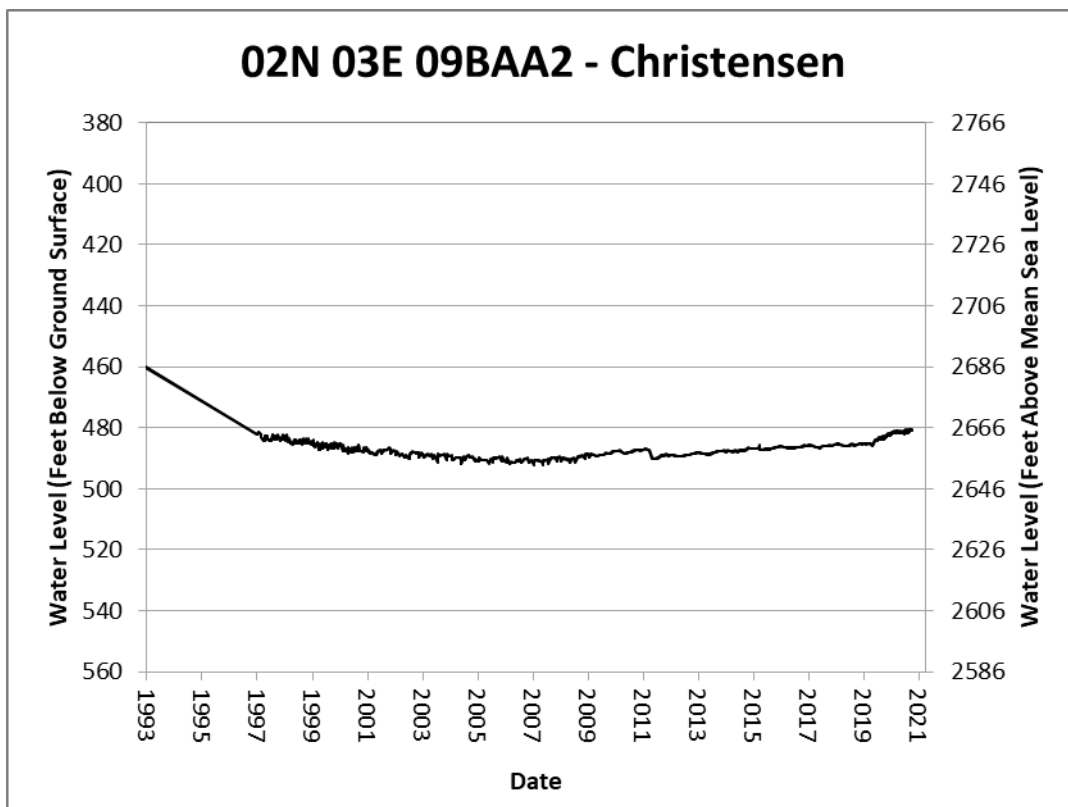
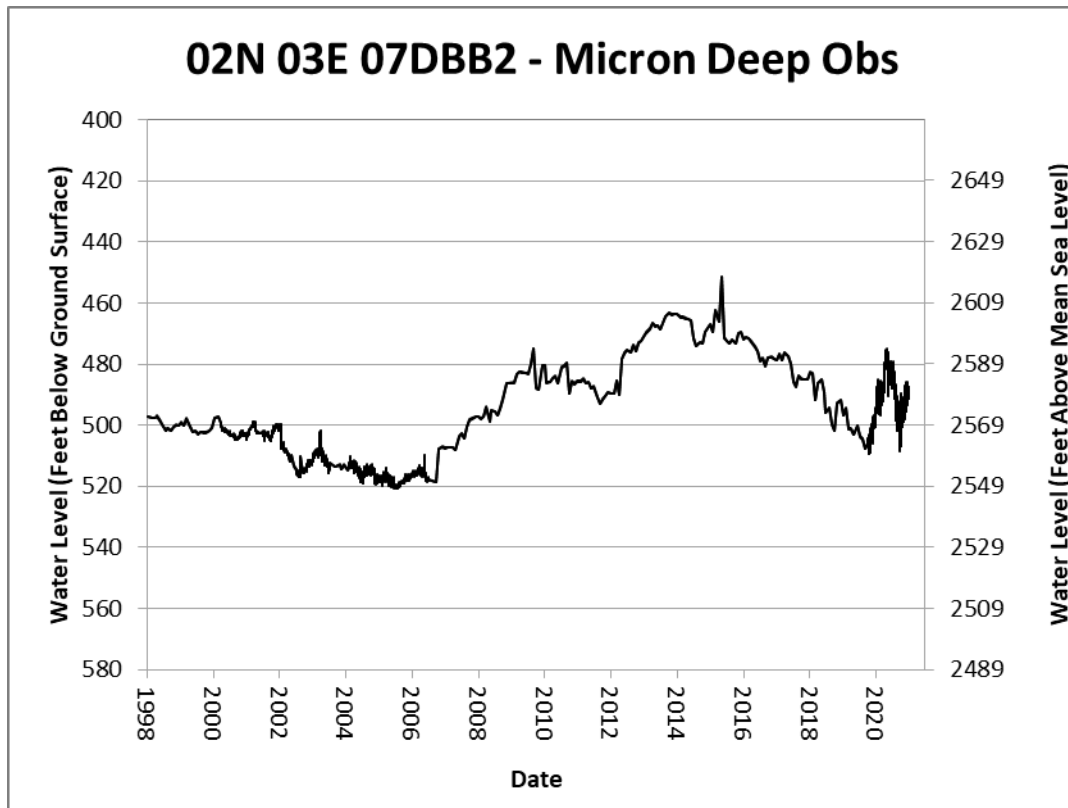


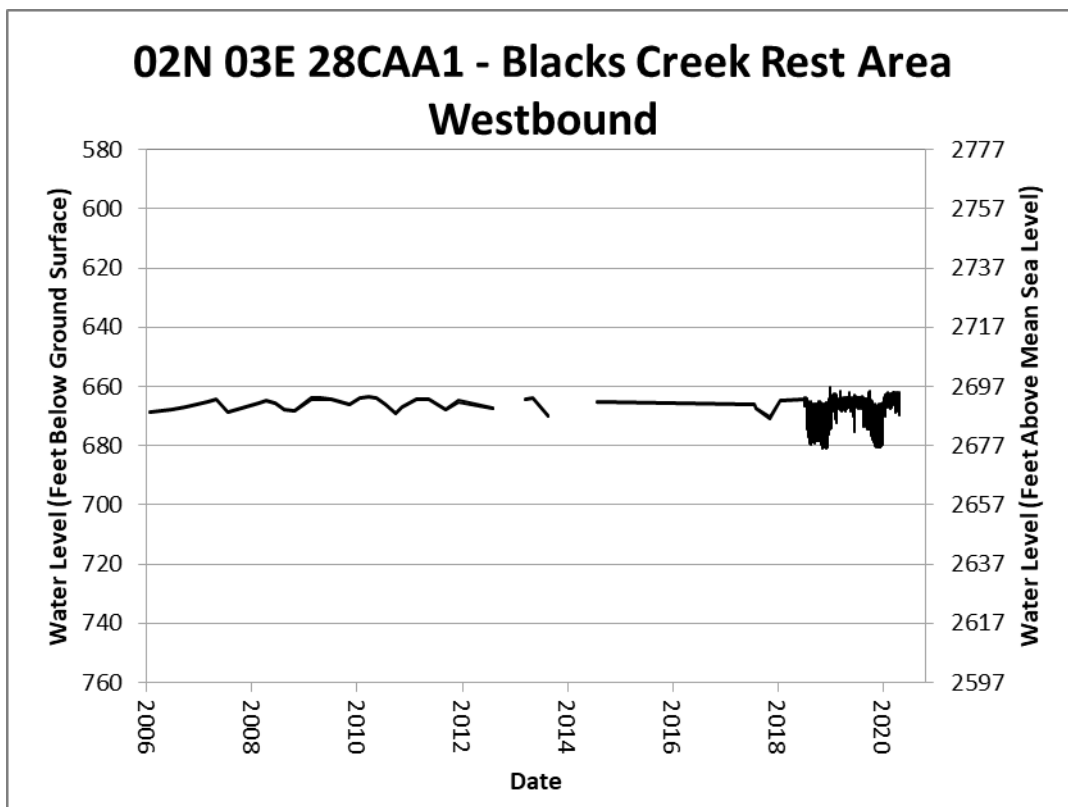
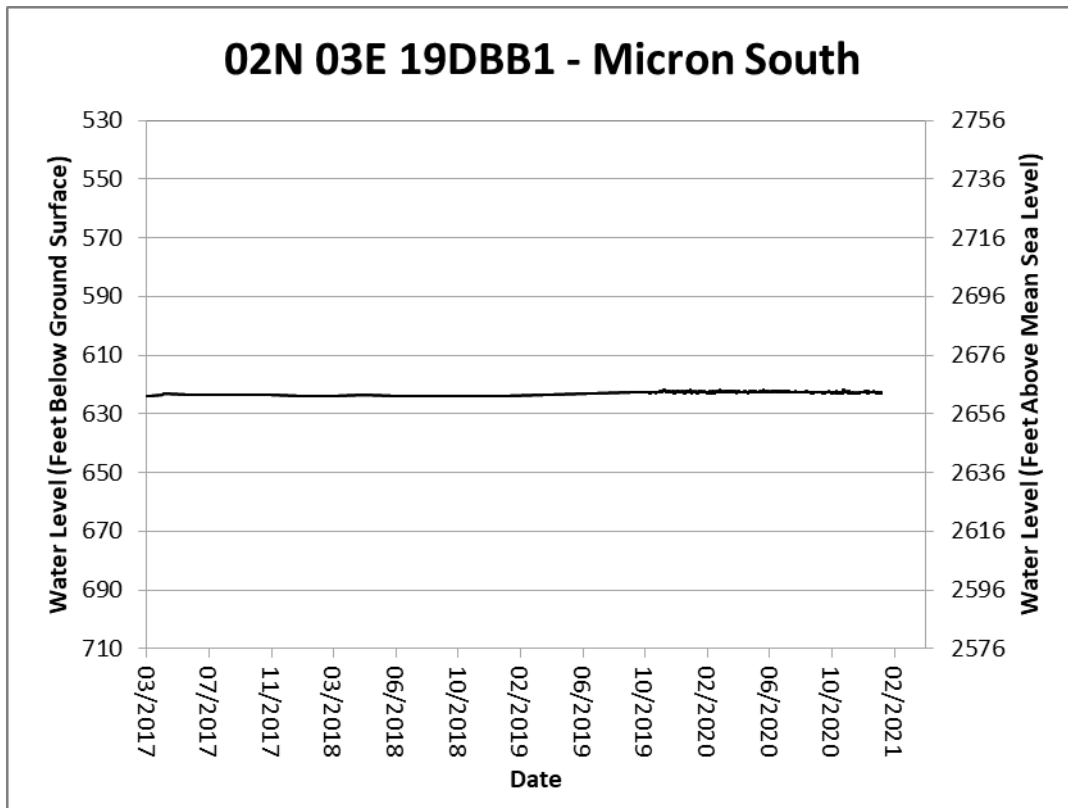


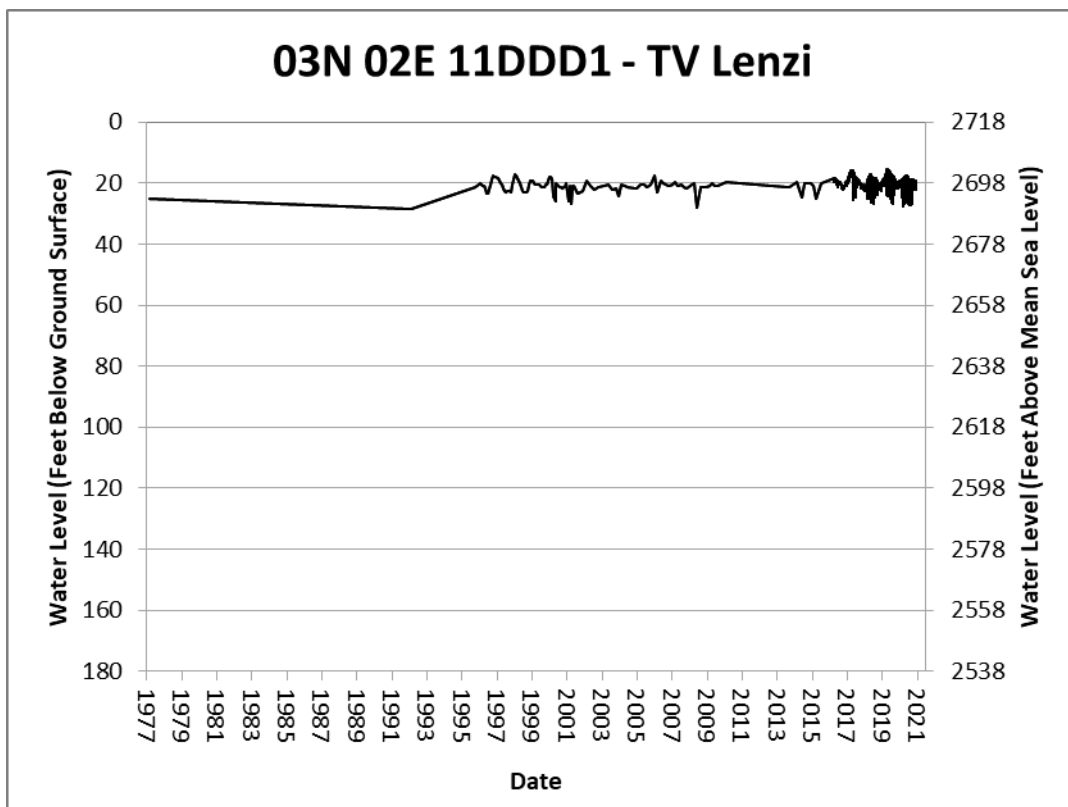
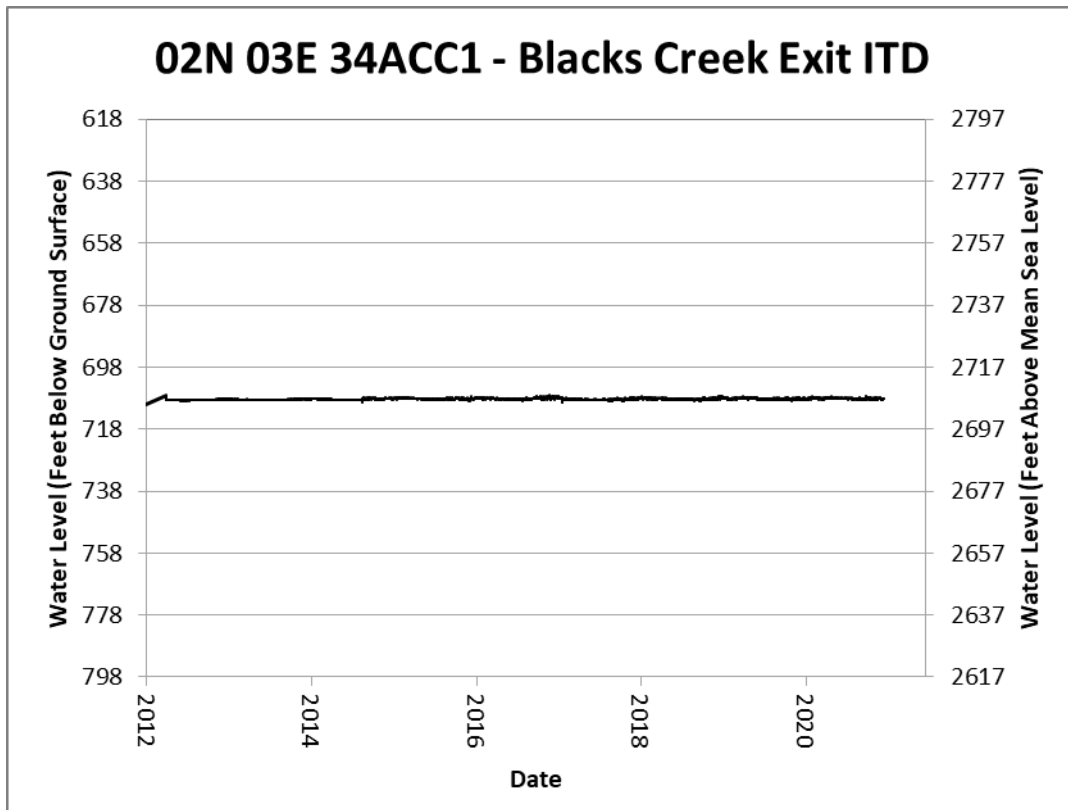


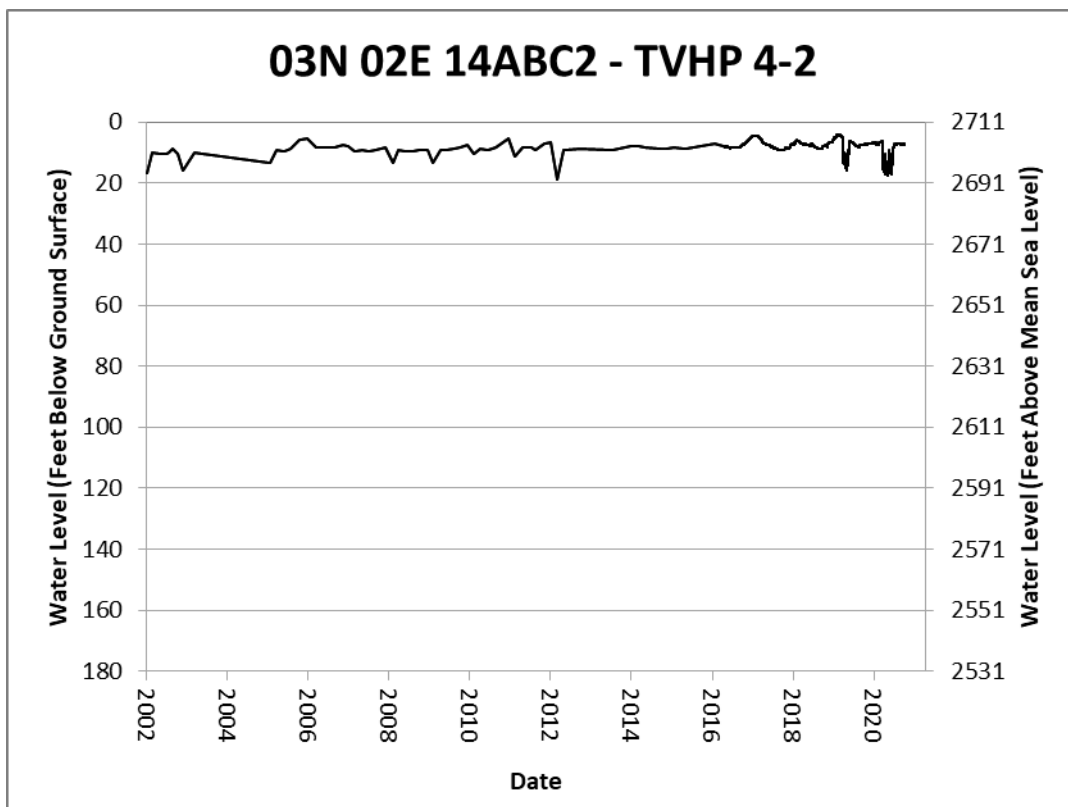
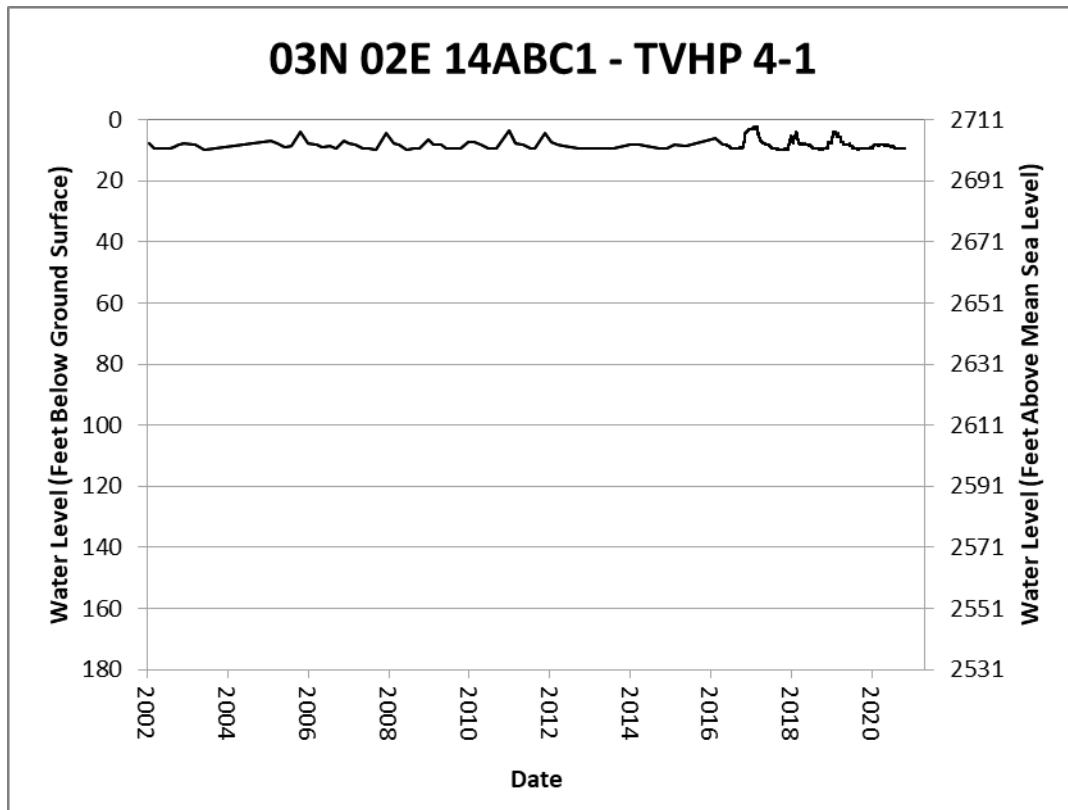


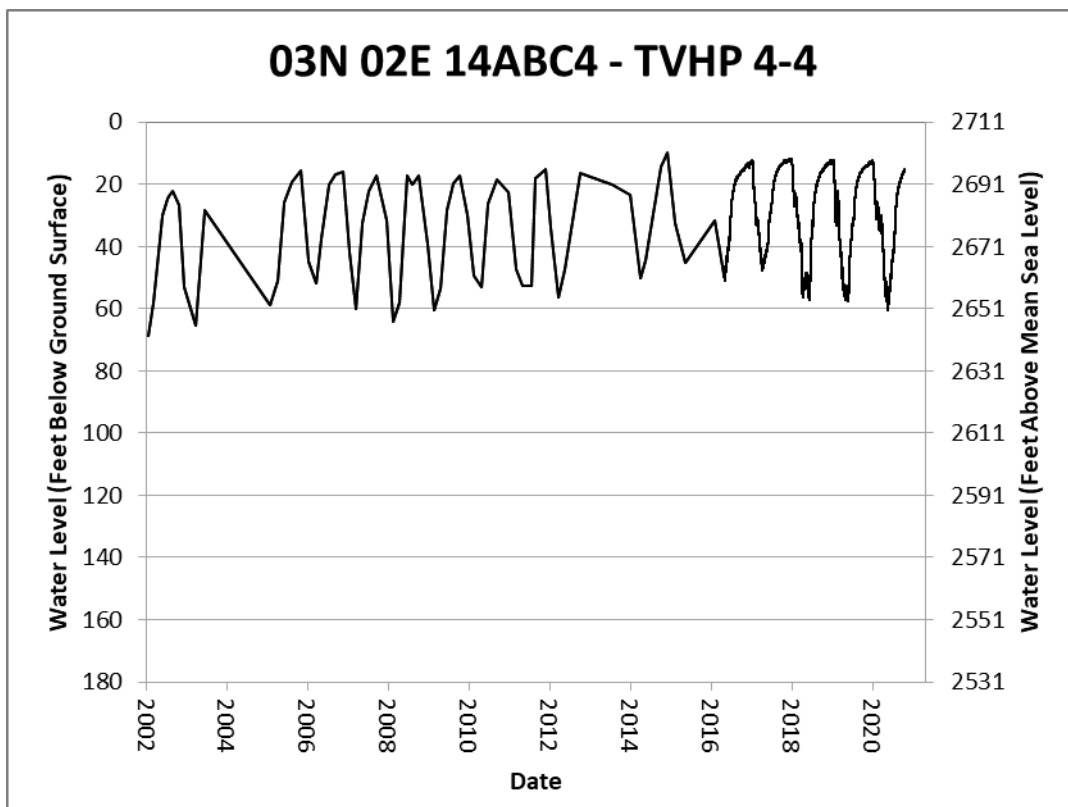
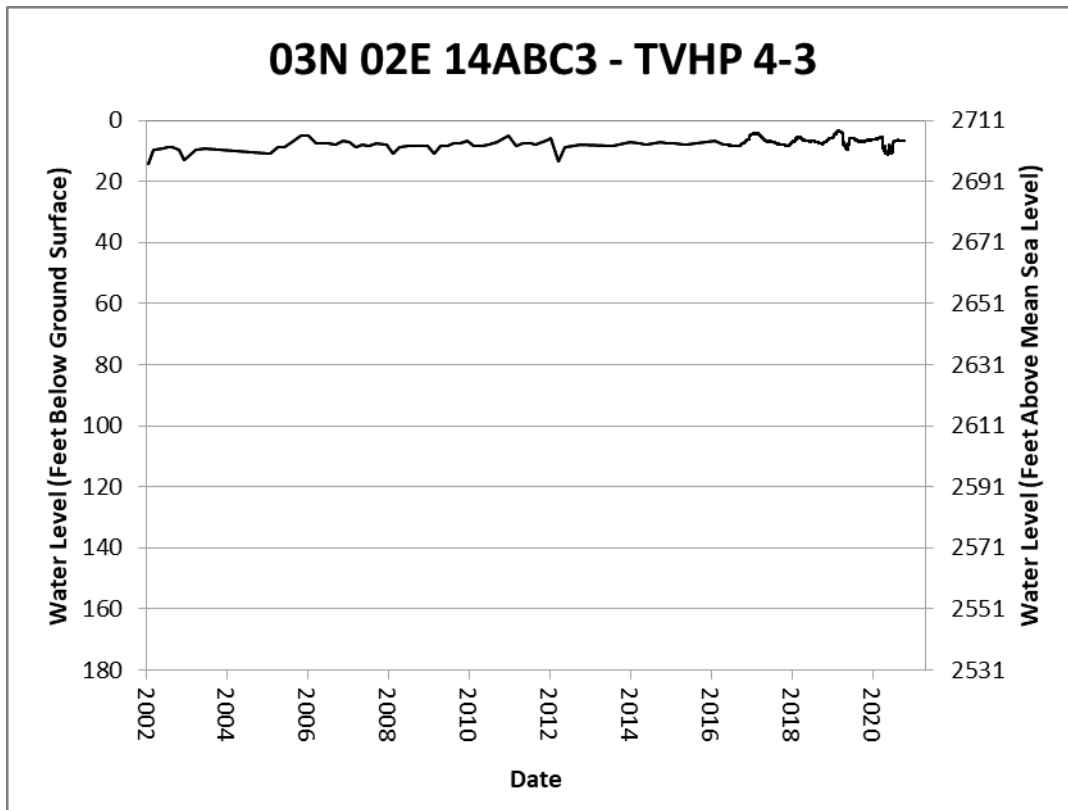


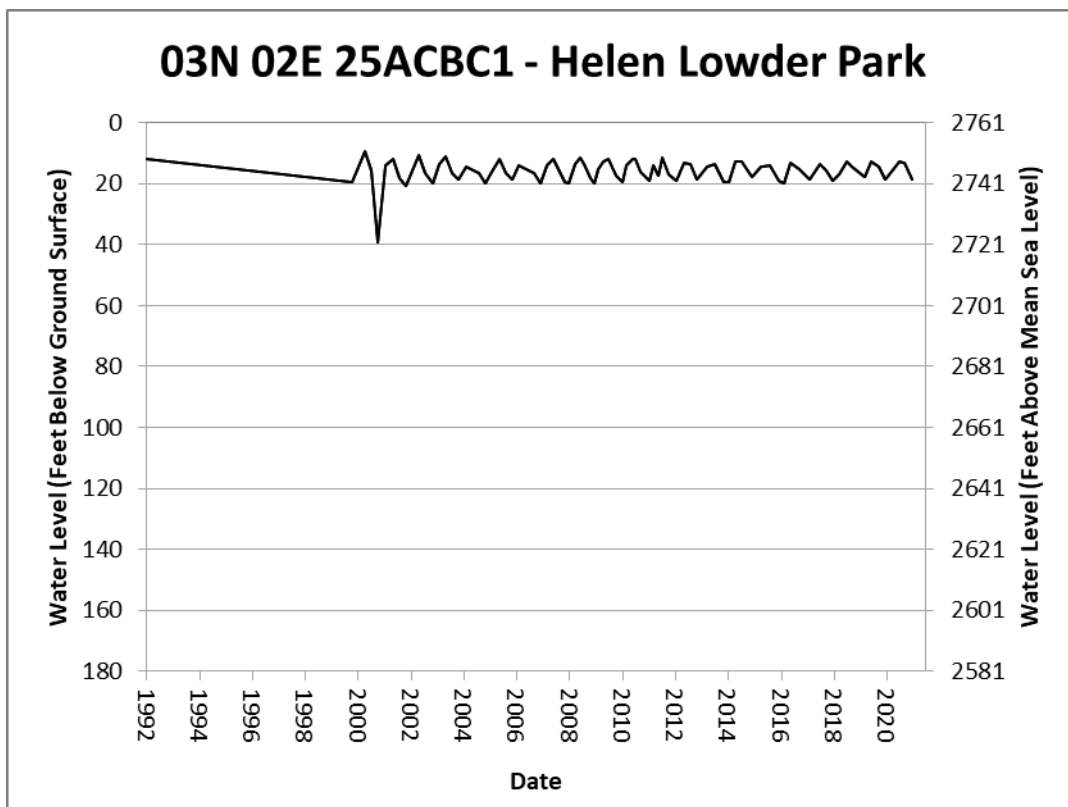
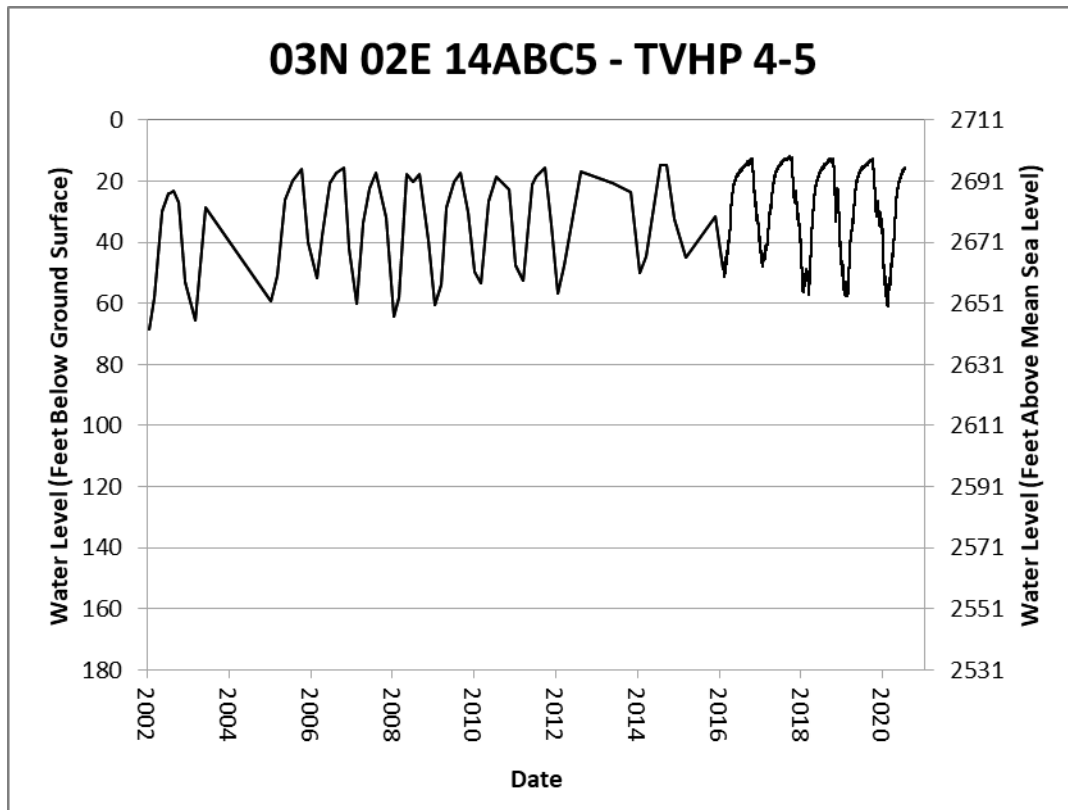


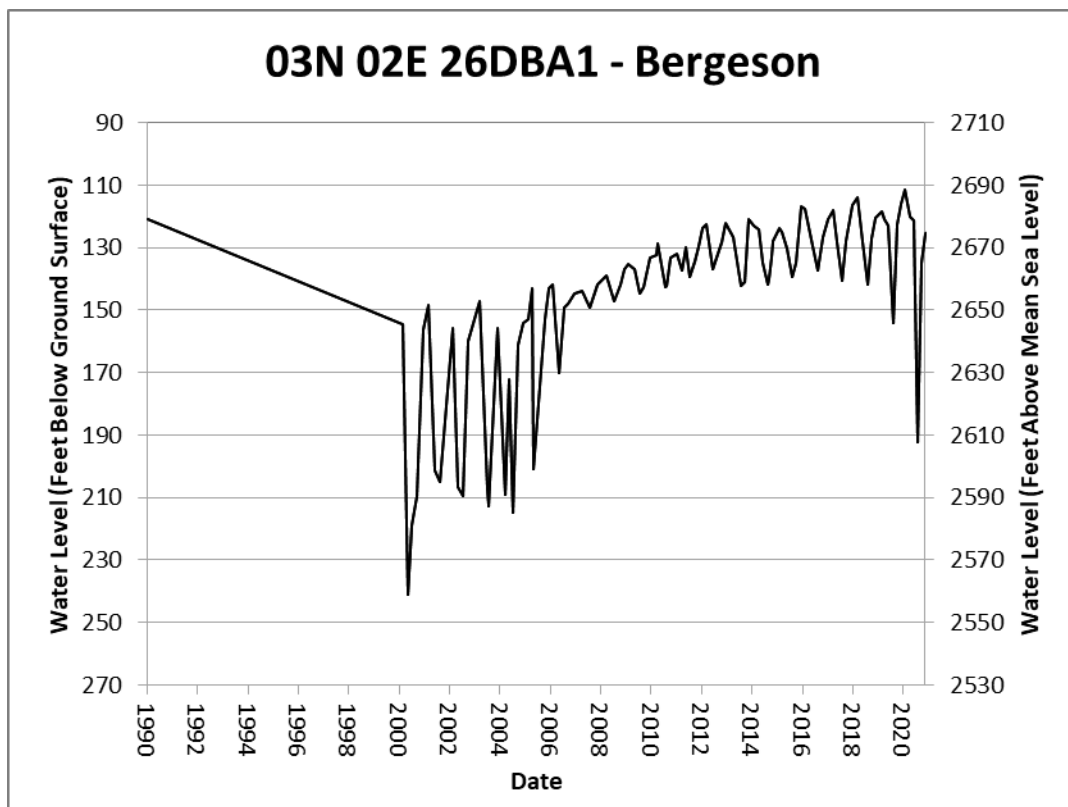
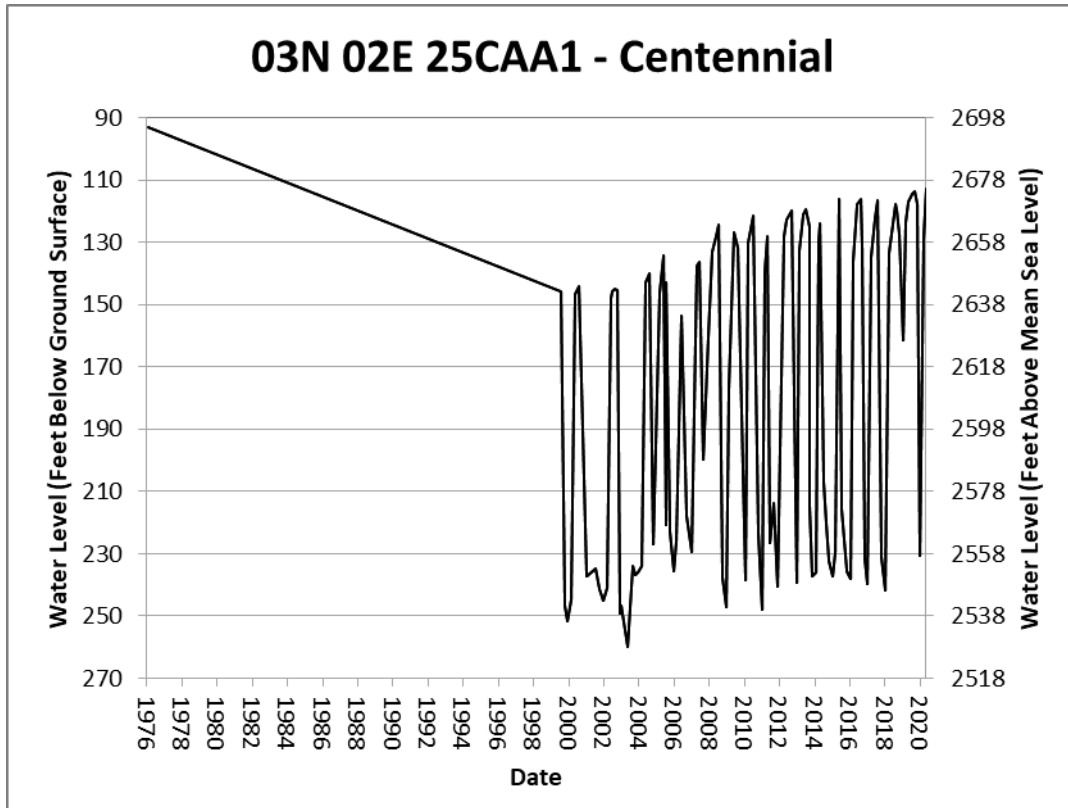


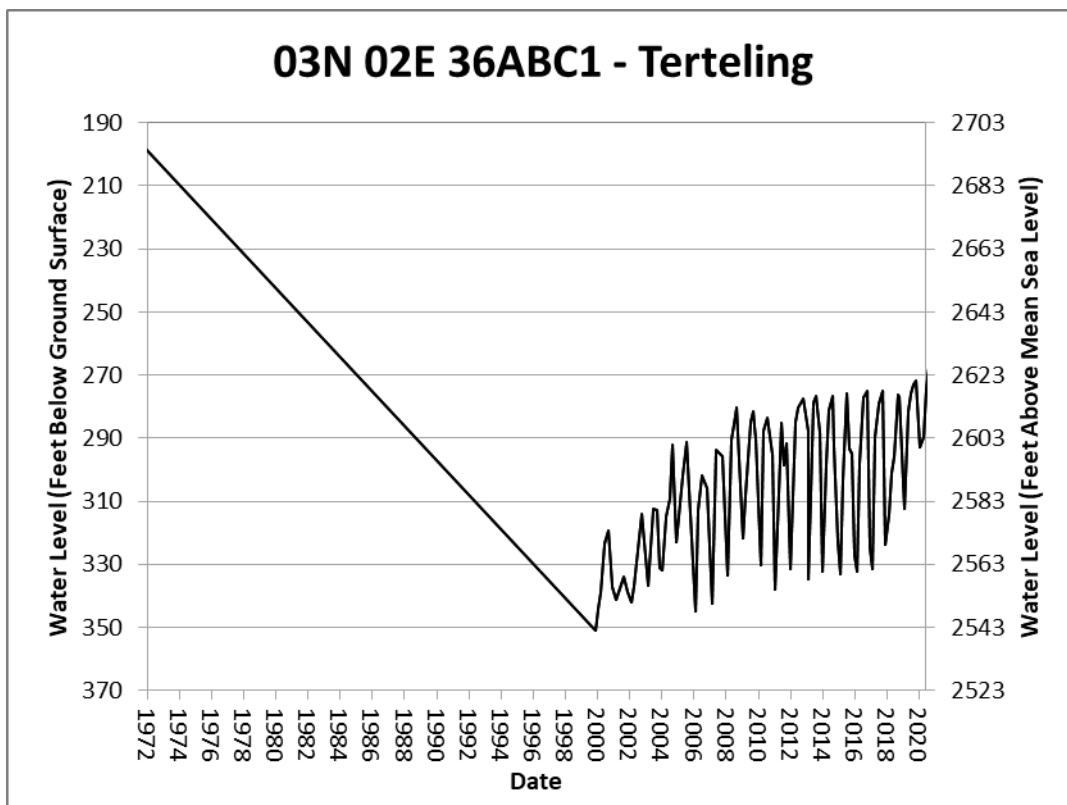
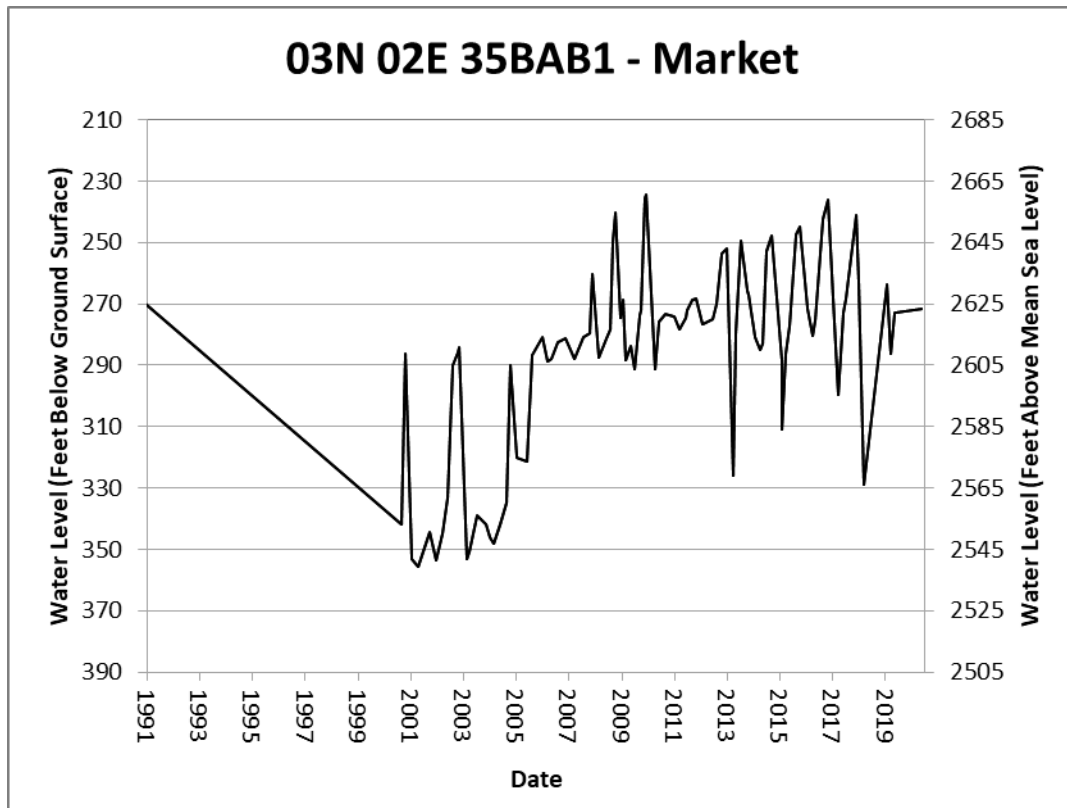


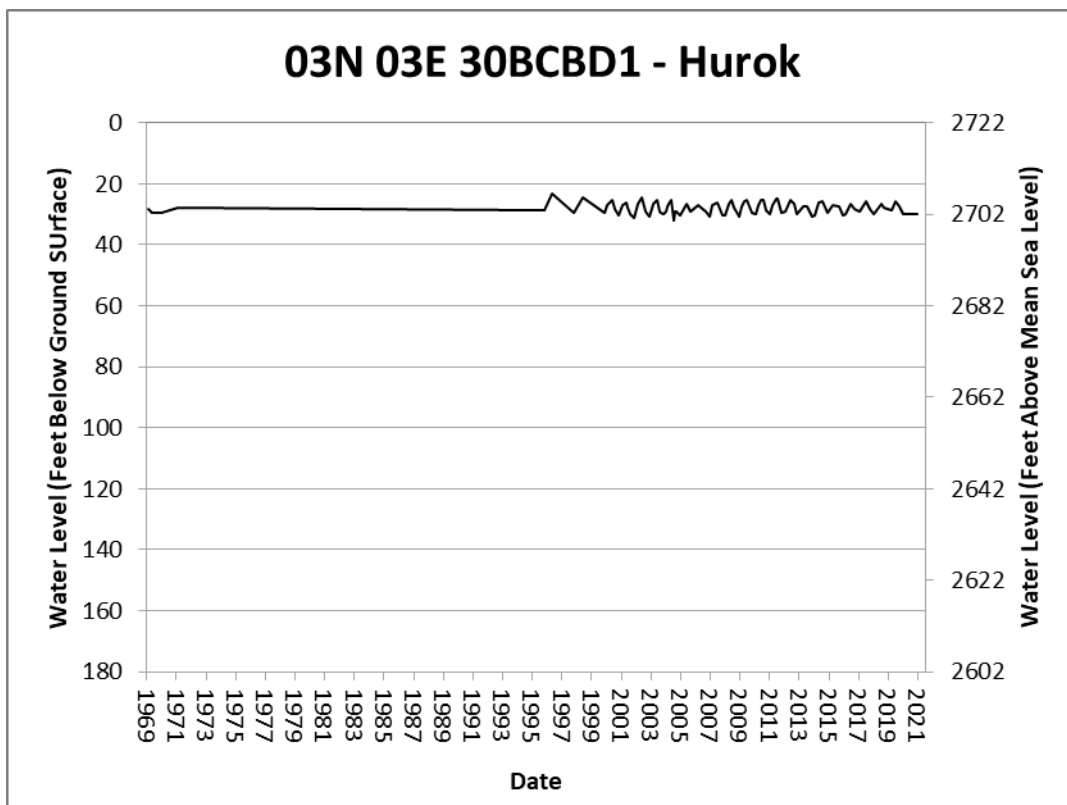
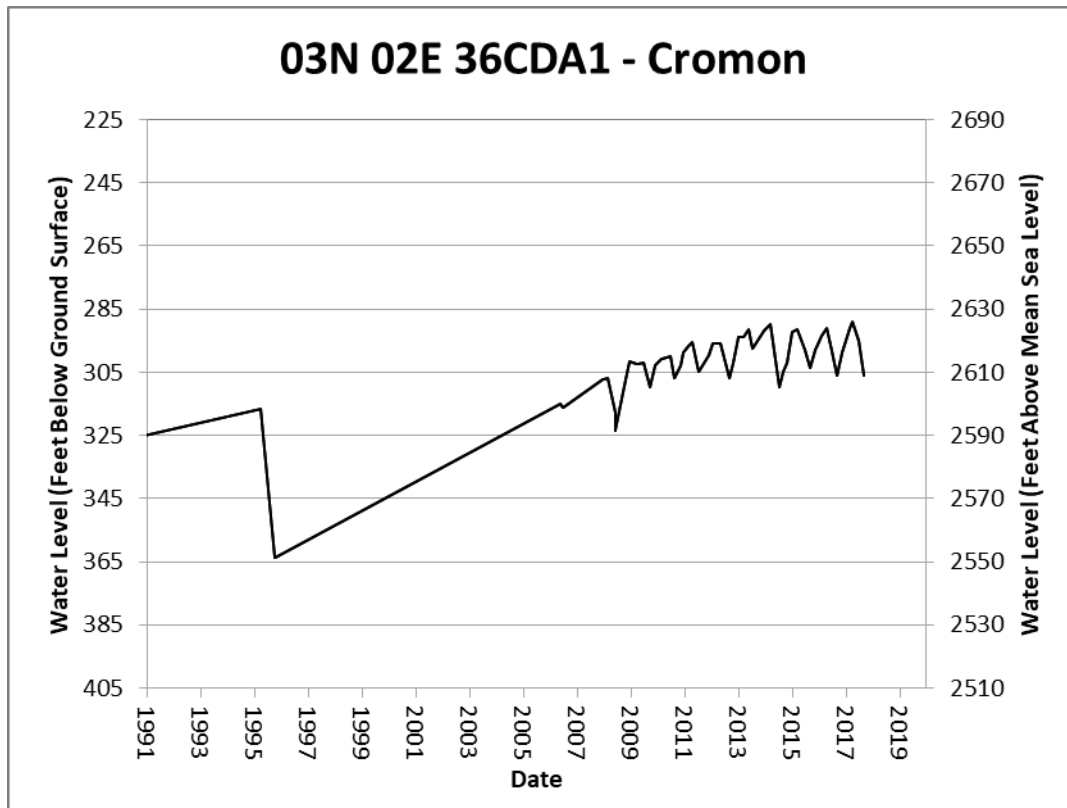


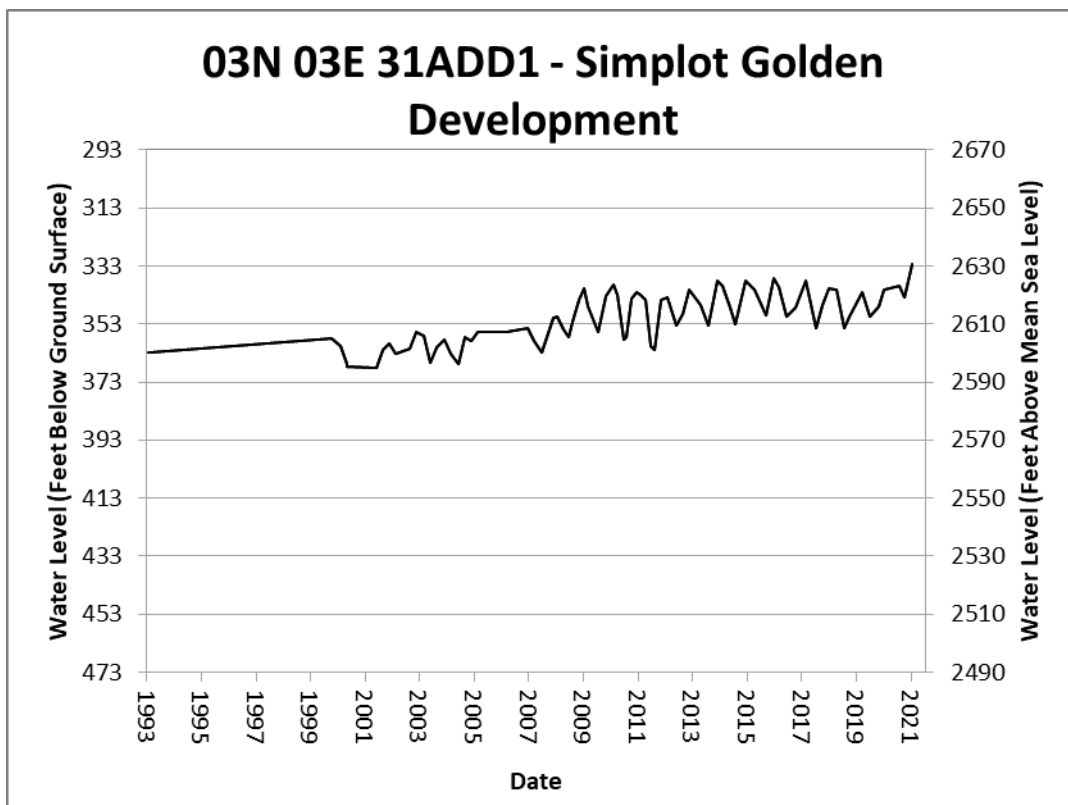
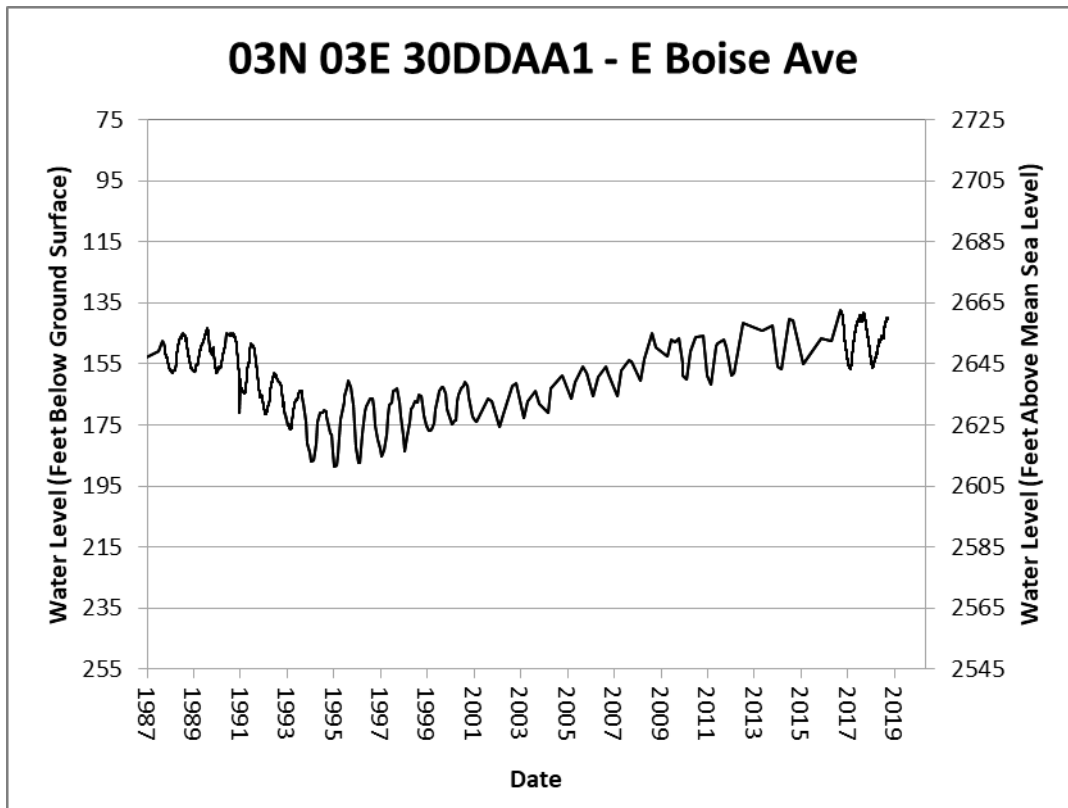


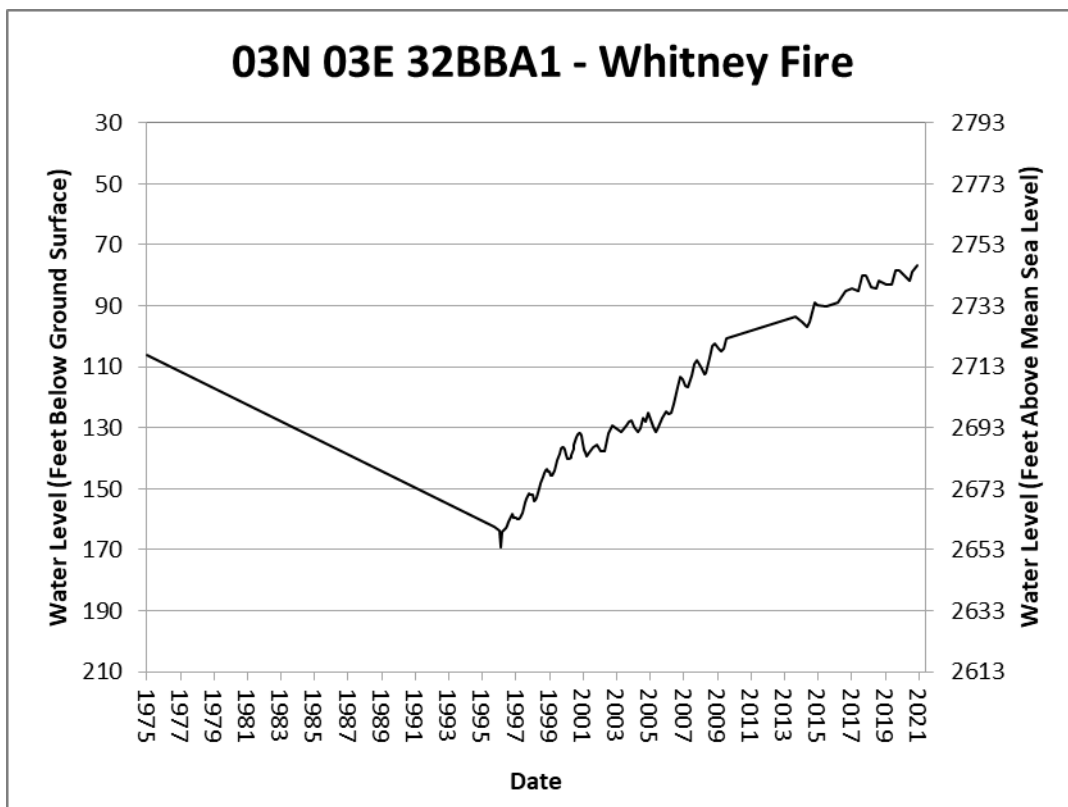
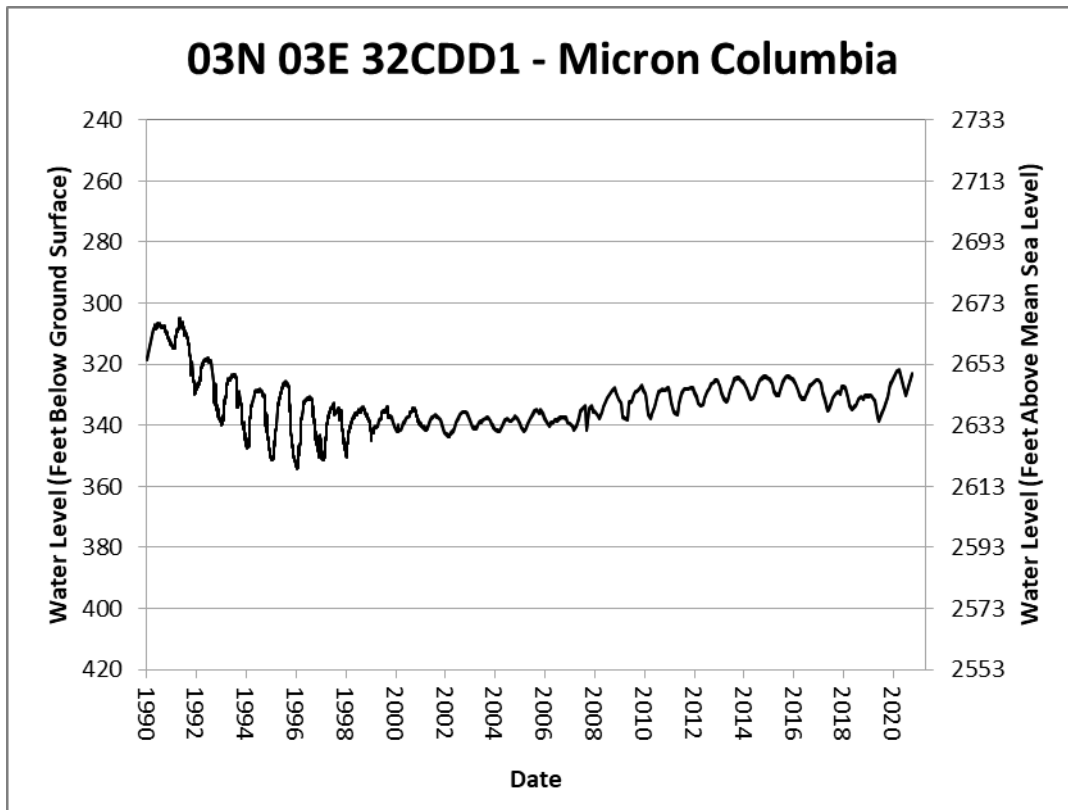


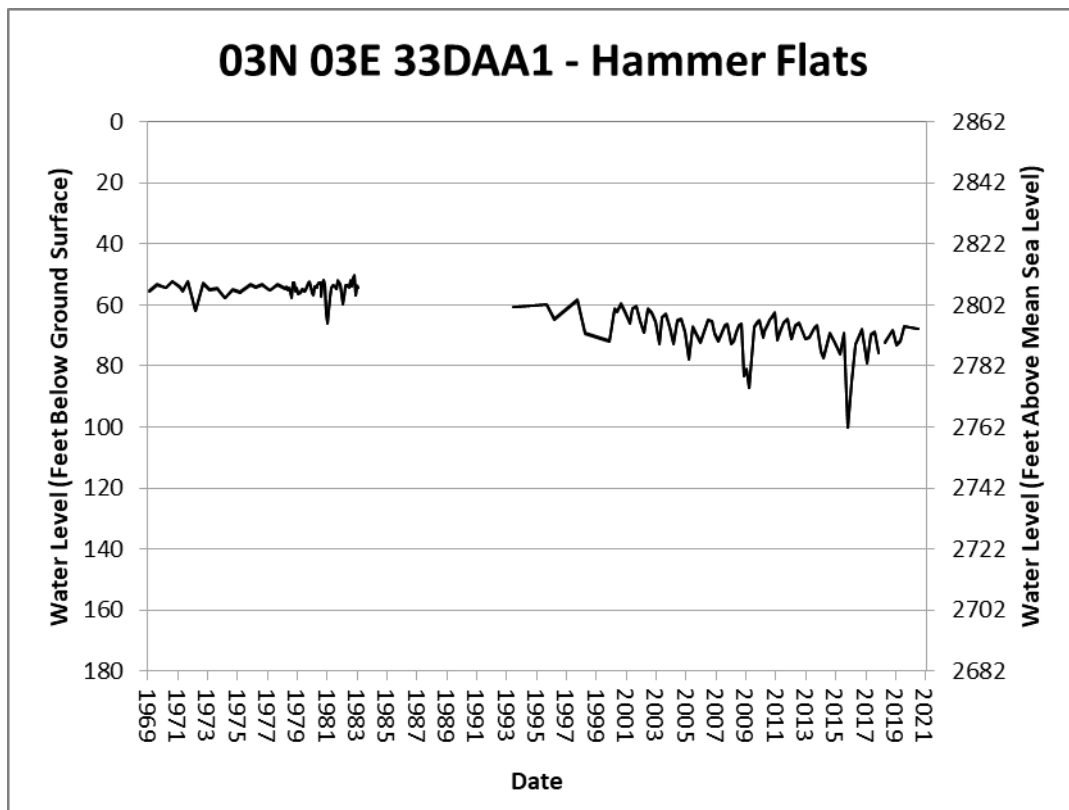












Appendix D

Hydrographs for Active Monitoring Wells from 1990 through 2020

